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An India Silver Field.

Americans were a little apt to think, before the growth of the Australian gold product, that, in the matter of that metal at least, their country was the "jumping-off" place of the world. Symptoms of a similar belief in regard to silver not unfrequently appear. But we warn our countrymen that even in that respect our position is not assured for ever. We never pass through the great West without finding new cause to wonder at the aggregation of veins and the mineral wealth there. But considering the immense tracts of continent in the East which are still unknown to us, we think there is little prospect of our maintaining our supremacy in silver. We speak at random, for nothing has as yet been discovered there to indicate the presence of silver-bearing veins in great numbers or importance. But it is not well to be too confident while all Asia and India remain unexplored. Discovery proceeds slowly, and probably for many years development in this country will outrun exploration there, so that America will for a long time remain pre-eminently the land of silver.

Of the Indian mines we have some intelligence through the London *Times* from a person, who writes as follows :

SIR,—A letter in the *Times*, of Sept. 4, mentions the "Silver country of the Vazeers," or, as the India Survey maps have it, "Vazeeri Rupi." Its consists of 677 square miles in "Kulu," which was visited by the late Lord Mayo last November, and he expressed a wish for a large piece of serpentine, of which there is a quarry here, to make an urn or vase 4 ft. high by 2 ft., and proposed having it carved at Agra. These silver mines, of which the true number is not yet known, have been hid and planted over for hundreds of years by the natives, to prevent the compulsory labor ordained by the native rajahs. Fearless of such exactions under British rule now, no opposition has been made to their re-discovery and opening, and with the consent of the Punjab Government the rajah has disposed of all his rights for minerals in Vazeeri Rupi to a European of experience and enterprise, who is now in England with a view to meet with capitalists to open the numerous and valuable lodes.

Dr. Oldham, the Superintendent of the Geological Survey of India, has had several specimens assayed. No. 2 gave 89 ozs. 16 dwts. 16 grs. of silver to the ton ; but, he remarks, not one-half of the silver is in the galena, but in the ore generally, which contained also 3·8 per cent. of copper, and the silver contained gold. Other assays have been made in London, giving 120 ozs., and native assays make some specimens as high as 1-16th silver. Considering that lead sells in the Punjab at £28 to £33 per ton, and produces nearly, if not quite, as much in silver, the profit offered is at least £40 per ton, and the sales made on the spot.

Besides these—at least 20 mines—there are as many of copper, which sells there for £120, affording an ample profit, the lowest price at Delhi being £112. There is also a lode of antimony, 15 ft. wide ; solid metallic ore of greatest purity cropping out on the surface of a high hill by the road. Added to these mines of wealth are salt—a mine of which, in Mundi, yields the rajah 300,000 rs. per annum, or £30,000 a year profit. Sulphur, manganese, bismuth and iron are in plenty, and there are hundreds of miles covered with forests of immense pine trees, 100 feet high, for fuel. Labor is plentiful at 4½d. per day ; and the roads and bridges are the great highway to the North. Gold is washed in the river, and diamonds have been found on the road. The climate is most lovely, and Kulu is annually visited by hundreds of officers on leave. Such a property needs only to be known to be immediately taken in hand.

R. W.

California as a gold field has been fairly outdone by Australia, and it is among the possibilities that our silver field shall meet its match too. The past history of those Eastern countries proves nothing. The fact that such a field as Nevada is, was unknown to the ancients does not prove that one does not exist under the very soil they cultivated.

This fact, however, proves, or rather indicates, one thing. It is an argument against the assumption that the ancients were as well versed in science and art as we. The assertion is constantly made that we are but repeating the old works, and following in the old paths, (a long way after) of our predecessors. It is said that all our discoveries in every branch of thought are but carrying us up to the point which they reached by finer perceptions and a purer intellectuality. That is, to say the least, extremely improbable. It is man's necessities and industrial methods that mark the extent of his scientific knowledge. Few are the facts in science that have not been made use of in ministering to his wants, and between the study of the stars and his personal comfort and advantage, there is an intimate and direct relation. We find nothing in the daily life of the ancients or in their mental remains to indicate that they dreamed of what we know ; and nothing in their material performances which proves more than that the Kings of that day had innumerable hordes of patient and industrious slaves.

The Colorado Mountain Railroad.

THE day of triumph has come to Colorado. Her history has been that of almost all countries where industry lies in the hands of amateurs, and every expedient is resorted to in order to avoid the only means of relief which is possible. Processes for working her ores were following each other a few years ago with such rapidity and such constant lack of success, that at length even the process makers became disgusted. All this while the subject of a railroad from the plains to the mines was talked over, and surveys made. But there it rested until a lull of a few years had sobered men's minds. But during the last year or two the subject has been revived, carried out, and the rails are now laid nearly or quite to Black Hawk and Central.

We look upon this as the corner-stone of Colorado's success as a Territory. The conditions there are such as make a railroad peculiarly important. Like all the regions lying between the Nevada mountains to the Missouri river, the Rocky mountains are not well enough timbered to afford the neccessary fuel for cheap and certain metallurgical work. There is no dependence except upon the coal, and that does not lie at the mines. It lies near, that is to say within thirty, forty, and sixty miles, but though near in respect to distance, that is an enormous interval when we consider the cost of carriage over it. A few years ago $40 a ton was paid for hauling 40 miles. Later, we believe, $15 a ton has been about the rate for steady work. These prices have been a wall between the smelter and quantities of ore which he might otherwise have been able to treat, and the prosperity of the country has suffered correspondingly.

With the nearing completion of the narrow gauge road to the mines, metallurgical industry is looking forward to better employment, and works are revived or building on all sides. The railroad, as we said before, is the corner-stone of prosperity to Colorado as it is to that of so many greater States. We have watched the course of this work with the greatest interest and hail its progress with satisfaction.

Puddling with Wood.

An Englishman who tried the doubtful experiment of starting a puddling furnace in Malabar, with natives for workmen, gives his experiences to ENGINEERING, and from his account we make the following extracts.

To puddle one must have a puddling furnace ; and taking into consideration the physical weakness of natives to be employed, it was deemed, at the forge written of, that a double furnace would, from their being able to work from both sides, give them a greater power over the rabble in balling-up than would have been the case had the single one—most ordinarily employed in England—been the form adopted ; and in further consideration of this weakness of the men, this double furnace was designed to hold a charge of only about 4 cwt. of pig. But in the construction of the furnace the first difficulty was that of fire-bricks. Nothing in the shape of a refractory material could be found in the neighborhood, and as Stourbridge bricks cost nearly 6d. each before they were placed in the forge, and the regularity of supply was, to some extent, from the length of transit, a little doubtful, it was of necessity that such clay as the country afforded should be used. The best of this was a quartzose chalk lying immediately below the laterite formation—into which, in fact, it passes—but which, apart from the silica it contained—for which the potash in the fuel constituted an admirable flux—was also wanting in anything approaching to a plastic or binding character fitting it for the manufacture of bricks suitable for reverberatory furnaces. It was attempted to obviate this by subjecting the moulds, or rather their contents, to the action of a screw-press ; but the mechanical appliances were, perhaps, indifferent, and the result certainly unsatisfactory. Yet the furnaces were built, and, under the superintendence of a practical English puddler—one, however, accustomed to mineral fuel only—the experiments were commenced.

With the exception, of course, of what the English puddler worked up himself, the result of most of the earlier heats was simply iron on the bottom, and the consequent labor and expense of getting it off. Yet the men grew shortly more adept, and began to notice the coming to nature of the iron and to acquire a certain facility in balling up. This step firmly fixed, then came the next one—of hammering or squeezing ; and the result of the experience gained was, that with iron naturally inclined to red-short, and manufactured by unskilful workmen who wasted time about getting the ball out of the furnace, sub-

mission to the squeezer was the better *modus operandi*. That the resulting mass was not, even when passed through the rolls, anything so good as a hammered ingot might have been, was undeniably the fact; but then the men grew more quickly accustomed to the work, and the out-turn was consequently larger; and as the writer's object is to indicate what, in his opinion, are the proper processes to adopt when undertaking, in the present day, the development of charcoal-iron making in new countries rather than to compare the advantages of hammering and rolling, he here, for the reasons aforesaid, simply says that if operations are to be on a large scale, squeezers and rolls are the better implements.

The method of firing was also a question which required many different experiments before it was satisfactorily solved. It will be readily seen that covering the firebars by throwing coal in through the ordinary stokehole, and to attempt the same thing by filling in billets of wood one at a time, are very different matters, both as to the length of time the stokehole requires to be open, and the quantity of combustible matter that can be got in. To aid things, the first plan adopted was to keep a little urchin perched on a bit of scaffolding, constantly engaged in flinging in the billets, and some of the lads grew tolerably expert in the business, keeping the bars pretty well covered. Another plan tried was that of a hopper over the center of the grate, with a draw valve at the bottom; this arrangement necessitated the billets being cut very short, which a little circular saw did readily enough, and was also open to the objection that if anything prevented this valve closing properly, as was frequently the case from the billets sticking in their passage down, the whole hopper was immediately converted into a flue, up which, as the nearest and most direct vent, all the flame in the grate naturally turned, to the destruction, of course, of the entire contents.

The yield from the earlier attempts was, as may be supposed, wretchedly bad; for, besides the iron wasted after it came to nature, from the slowness of the workmen, and carried up the flue, their awkwardness in balling-up left much iron upon the bottom at nearly every heat. A great deal has been written of the cheerful, happy characteristics of the Negro, the impassability of the Red Indian, and the gravity of an Eastern potentate—the satisfaction of an Englishman after a good dinner has also been mentioned—but not one of these can be compared, in the writer's opinion, to the air of justified pride with which, after a heat (such as it was), had been drawn, the Maistry (what is the derivation of this word, so universal in the East?) would report to the Sahib that it was all out, and that the men would like a little "Innam" (present).

A word is necessary here as to the drying of wood fuel. Nothing in the world is so impossible as to get a strong, clear fire, fit to puddle with, from green wood; and it is also certain that sun-dried wood, unless actually decayed, generally retains a portion of the sap, *id est*, the outside is dry whilst the heart is sap-wet, and in this lies a difficulty which the puddler with wood fuel has to contend, and from which his *confrere* who uses mineral coal is free—a portion of the wood itself in the first case going to evaporate its own moisture. In highly resinous wood this is of but little moment; and doubtless the ease and success with which in Norway, Sweden and parts of Austria (Styria) puddling is effected, is attributable to the pine timber. In Malabar, however, neither the soft nor the hard woods contain much, if any, turpentine, and hence do not carry the flame (and all puddlers know that flame, and flame alone, will puddle) which resinous woods give out. Hence, in any attempt to use other than a highly resinous fuel, arrangements for stove-drying must be made, and in this will be found one of the expenses which attend working with wood fuel. The plans adopted in this regard at the works now referred to were various. At one time stoves were built at the end of the forge engine boilers, and the flues carried through them. Sufficiently successful as was this arrangement, it was open to the objection of somewhat checking the draught; and as the boiler area was small for the engine requirements, the plan was given up, and separate stoves erected, in the grates of which were used the chips and shavings from the carpenters' shops; but with all this, the general result was that properly dried fuel was seldom ready, or, at least, it was always a hand-to-mouth struggle to keep up the supply. In the estimates to be prepared for any new forge to consume wood fuel, a sum should be included for the erection of drying stoves, and care should be taken that the capacity of these be such as to enable them to act as storehouses as well as stoves, for in most climates desiccated wood, where exposed to the influence of the atmosphere, will readily absorb as much as 10 per cent. or 15 per cent. of its weight of moisture in as many hours, and thus the labor and expense incurred in the drying process become almost absolute waste.

Manufacture of Iron and Steel.

BY EDWARD RILEY, F.C.S.

[Continued from Page 211.]

I find that a little phosphate of iron almost always remains with the silica from pig iron, and in accurate analyses the silica should be driven off by hydrofluoric acid, and the remaining phosphate of iron added to the phosphorus determination. I invariably find titanic acid in the residue from the graphite in hematite pig, frequently the residue is pure titanic acid.

Hematite pig requiring only dilute hydrochloric acid to dissolve it, if any slag existed in the pig, surely it ought to be left with the graphite.

In dissolving pig iron in neutral chloride of copper and using a little dilute hydrochloric acid to dissolve any basic iron salt, I have never been able to get any indications of the presence of slag in pig iron, or have never been able to find satisfactorily aluminum in pig iron; if the pig contained slag it certainly ought to be present.

I have entered somewhat fully into the question of the presence of slag in well run and solid cast iron, as I think the point ought to be definitely settled.

Hematite pig is special in its character on account of its freedom from phosphorus and its adaptability for the Bessemer process. All the hematites are more or less siliceous, the Cumberland ores being less so than the Lancashire ores. Hematite pig is decidedly siliceous, and the efforts of manufacturers of this pig are always directed to reduce the amount of silicon present. The introduction of aluminous ores in the furnaces from Belfast and Antrim materially modifies the percentage of silicon and reduces it in some cases in the pig to below 1 per cent. Hematite pig, however, rarely contains less than 2 per cent. of silicon, and it not unfrequently contains 4 or 5, and even more. Amongst several samples recently examined I have found—

	No. 1.	Light-colored grey glazed pig.	No. 1.	No. 1.
Silicon	4·287	5 652	3·756	3·963
Sulphur	·041	·103	·046	.037
Phosphorus	·057	·055	·033	·036

No. 1 Bessemer pig may contain over 4 per cent. of silicon without there being any apparent difference in its fracture, although with this percentage of silicon the strength of the pig will be materially reduced.

In the manufacture of Bessemer pig from siliceous hematites there are all the conditions essential for making siliceous pig, viz., an excess of fuel and an exceedingly high temperature.

The percentage of phosphorus in hematite pig rarely exceeds one-tenth per cent., and is frequently not more than ·03 to ·05.

Scotch pig made from black band is very similar in its composition to the best Cleveland; it contains, however, less phosphorus; the average would be about 1 per cent., or, perhaps, rather over. It is considered to be a stronger and rather better pig than Cleveland.

Northamptonshire pig smelted from the Northamptonshire oolitic iron ores is a weak pig. The percentage of phosphorus in it is high, about the same as that of Cleveland and the silicon also high, especially if it is smelted with hot blast.

Lincolnshire pig from the Lincolnshire oolitic ores, which contain mostly an excess of lime, is much less siliceous in its character than the Northamptonshire pig; the phosphorus is also lower.

Having considered briefly some of the general characteristics of the various descriptions of pig iron, I purpose next considering the elements which enter into the composition of pig iron.

The chief constituents of pig iron are carbon, silicon, sulphur, phosphorus, and manganese; besides these, there are usually present traces of copper and titanium (the latter in grey iron only), frequently nickel and cobalt, and occasionally vanadium and arsenic.

The percentage of carbon in the best varieties of pig iron varies from 3 to rather over 4 per cent., except, perhaps, in the variety of iron known as Spiegeleisen, which sometimes contains nearly 5 per cent.; I have, however, never found it as high as 5, although some authors give as much as 6 per cent.

Silicon, when present in large amount, as in Bessemer pig, reduces the percentage of carbon, as before mentioned; in inferior pig iron, containing much sulphur and phosphorus, the carbon is always low.

	Staffordshire. I.		Locality not known. II.
Carbon	1·339		1·982
Silicon	·462	·488	·912
Sulphur	1·130	1·121	·567
Phosphorus	3 967	3·874	2 910
Manganese	·221		1·055
Iron	93·011		93·615
	100·128		101·041

I cannot at all agree with Mr. BELL that a reduction in temperature in the furnace is chiefly the cause of the production of white iron. I believe it to be due to sulphur. If a furnace is worked with a very sulphury coke the iron will be white, although you may have a sufficient burden of fuel in the furnace to make the iron grey if the coke were not sulphury. Coak or coal-made white iron in my experience always contains more sulphur than grey iron, and I believe it impossible to reduce the percentage of sulphur below 1·10 per cent., even with the very best north country coke; white iron in my experience does contain rather less carbon than grey pig made from the same materials.

Take the analysis of two samples of Staffordshire pig, in which the sulphur was in one case ·61, in the other ·36, and also in the analysis previously given—

	White pig with a few specks of mottled in center.	Good mottled pig.
Carbon	2·30	2·59
Silicon	1 36	1·11
Phosphorus	1·02	1·06
Sulphur	·61	·36
Iron	94·93	94 36
Manganese	·81	1·43
	101·03	100 91

When the sulphur in one pig is about double that in another, the carbon is reduced more than 6·16 per cent.

The most satisfactory way of determining whether the amount of carbon is due wholly to the temperature at which the iron is produced, or the rate of cooling, would be to examine the pig, white and grey, made from charcoal where there is practically no sulphur in the iron. As the furnace works quicker when making white iron, I am inclined to think that white iron does contain less carbon than grey iron, as the iron has not had time by being sufficiently

long in contact with the fuel to take up the full amount of carbon.

Sulphur in pig I believe to be entirely derived from sulphide of iron in the fuel, originally from pyrites, or from any sulphide of iron that there may be in the ore. The best cokes all contain a mixture of metallic iron and sulphide of iron; in some, after burning off all the carbon, there still remains sulphide of iron in the ash. I differ from Mr. BELL in his supposing that the iron takes sulphur from the calcium when silica and alumina are present in such quantity as only to produce a vitreous slag; good grey iron, No. 3 and No. 4, Bowling, for instance, is made with a vitreous cinder. I think it more probable that the excess of lime acts upon the sulphide of iron in the coke and ore, and converts it into sulphide of calcium and metallic iron. By using a heavy burden of lime in a blast furnace, grey iron may be made even when some quantity of fluery, flue, or forged cinder is used; it is well known that such materials contain some amount of sulphide of iron; the sulphur must necessarily be taken out by the calcium of the lime. If simply a lower temperature were the cause of iron being richer in sulphur, then, clearly, of two furnaces working, one with hot blast and the other with cold, and both making white iron, the cold-blast iron ought to contain more sulphur than the hot-blast; few, however, will accept this view as correct. Mr. BELL maintains that the temperature of a hot-blast furnace is not higher than that of a cold-blast furnace, as the hot-blast furnace has to smelt more material than the cold-blast. This conclusion I think open to question.

I have known coke that has been condemned as too bad to be used at an ironworks, to have been used after exposure to the weather for two or three years when fuel was short, and good iron to have been made from it; this I attribute to the gradual oxidation of the sulphide of iron in the coke, and to its being washed out by the weather.

I know also some descriptions of coke that give on analysis a very high percentage of sulphur, and still they make a fair quality of iron, on account of much of the sulphur existing as sulphide of calcium.

In making Bessemer pig, is not the heavy burden of lime and fuel used to make No. 1 iron, to insure that the pig contains a minimum amount of sulphur? or if it were not so, why should not No. 3 answer as well for the Bessemer process; the silicon is decidedly lower, and it contains often as much carbon as a highly siliceous No. 1 pig? It will be seen, however, on referring to my analyses, that there is a distinct difference in the percentage of sulphur.

All blast-furnace cinder is, in my opinion, sufficiently basic to retain the small amount of sulphur it contains, and the percentage of silica would have to be largely increased before it would drive off any sulphur from the calcium.

(TO BE CONTINUED.)

Ohio Gas Wells.

BY J. S. NEWBERRY, State Geologist.

The many inquiries addressed to me in regard to the possibility of obtaining gas at Cleveland, by boring for it, indicates some interest in the subject, and prompts me to send you the following *resumé* of "what I know about our gas wells." Carburetted hydrogen is the chief component of the gas which escapes from the earth in wells and springs in many localities. It is evolved in the working of coal mines and constitutes "fire-damp." It is also a constant associate of petroleum, and always issues in greater or less quantity from oil wells. It is given off, too, in the decomposition of recent vegetable matter, and may be seen bubbling up through the water of all pools in which plants are decaying. When it escapes from the earth it may be generally traced to beds of bituminous matter, such as coal, lignite, carbonaceous shale, asphalt, oil, etc. From these substances it may be obtained by artificial distillation, and is evolved by the spontaneous decomposition which all organic substances suffer on exposure.

As carburetted hydrogen produces a brilliant light in combustion, it is largely manufactured and used for the illumination of cities and residences. So extensively is it employed for this purpose that it may be regarded as an indispensable element in our modern civilization. It is not strange, then, that efforts have been made to utilize the immense quantities of gas which flow from wells and springs in so many different countries. The Chinese have for hundreds of years used for lighting and heating, the gas which emanates from the earth in several provinces of their country. In the United States the gas which issues from the salt wells of the Kanawha Valley has been for many years employed as a fuel in the evaporation of the brine.

The town of Fredonia, in Western New York, has for more than forty years been fully or partially lighted by gas which issues from springs at that place. In the borings made for oil in the various oil districts of the Western States, the gas which has been produced so abundantly has been regarded as a useless, frequently an inconvenient and dangerous product. Within a year or two past, however, this gas has been utilized in numerous localities, and already a large number of wells have been bored for the express purpose of obtaining it. In some cases these gas wells have been highly productive, furnishing an abundance of material for heating and lighting in its most convenient and manageable form, so that this deserves to be reckoned as one of the important elements in the mineral resources of our country. As this method of procuring carburetted hydrogen gas forms a new industry and one which will probably assume considerable importance, a few words in reference to its present condition and prospects may not be without interest to the public. I therefore extract from my notes a few facts in regard to some of the most interesting of our gas producing districts. On the Upper Cumberland, in Kentucky, gas accumulates in such quantities beneath the sheets of Lower Silurian limestone, that many hundred tons of rock and earth are sometimes blown out with great violence. These explosions have received the local name of "gas volcanos." In Ohio gas escapes from nearly all the wells bored for oil in the oil producing districts. Of these, two bored by Peter Neff, Esq, near Kenyon College in Knox County, present some remarkable features. These wells were bored in 1866, at the same geological horizon as that which furnishes the oil on Oil Creek, Pa. At the depth of about 600 feet, in each well, a fissure was struck from which gas issued in such volume as to throw out the boring tools and form a jet of water more than 100 feet in height. One of these wells has been tubed so as to exclude the water, and gas has continued for five years to escape from it in such quantity as to produce, as it rushes through a two and a half inch pipe, a sound that may be heard at a considerable distance. When ignited the gas forms a jet of flame three feet in diameter and fifteen feet long. The other well, which has never been tubed, constantly ejects, at intervals of one minute, the water that fills it. It thus forms an intermittant fountain, one hundred and twenty feet in height. The derrick set over this well has a height of sixty feet. In winter it becomes incased in ice, and forms a huge translucent chimney, through which at regular intervals of one minute a mingled current of gas and water rushes to twice its height. By cutting through this chimney at its base and igniting the gas in a paroxysm, it affords a magnificent spectacle—a fountain of water and fire which brilliantly illuminates the ice chimney. No accurate measure has been made of the gas escaping from these wells, but it is estimated to be sufficient to light a large city.

At West Bloomfield, N. Y., is another gas well, not unlike those I have described. This is bored to the depth of five hundred feet, reaching down to the vicinity of the Marcellus bituminous shales. From some measurements made by Pro. Wurtz, it appears that about fifteen cubic feet of gas escape from this well every second. It is proposed to utilize this large amount of valuable combustible by conducting it through pipes to Rochester, a distance of twenty miles.

At Erie, Pennsylvania, there are now twenty-five wells in successful operation, most of which have been bored for the special purpose of obtaining gas. Mr. Henry Newton, my assistant in the School of Mines, has recently made, at my request, a careful examination of all of these wells, and has given me a detailed description of each. I quote one or two of these for the purpose of conveying a clear idea of their general character.

First. H. JARECKI & Co. (Petroleum Brass Works) have two wells; the first bored for oil in 1864, 1,200 feet deep. No oil was obtained, but brackish water and an abundant supply of gas. This is used to light a few houses. The second well was bored in March, 1871, for gas, is 700 feet deep, and is used to supply gas to light the shop and heat the boilers. The supply is not at all regular and has perceptibly failed since the Conrad well was sunk near it. The heating power of the gas from well No. 2 is roughly estimated at from eight to ten tons of coal per month.

Second. Brevellier's well was sunk for oil in 1864, depth 625 feet, diameter five inches. The gas supplies five fires in the soap factory and three in the house of the proprietor, besides lighting both establishments. It has been used in the factory for five years.

Third. Well sunk by Senator LOWRY for gas in October, 1870, 520 feet deep, passing through 50 feet of sandrock, then through gray slate and flag stones, terminating in a dark shale. The gas is used for all household purposes, for cooking, heating and lighting. When used in ordinary stoves the stove is partially filled with furnace cinders or broken brick. In open fires it is burned in clay boxes made to represent wood.

Fourth. Conrad's brewery, sunk in March, 1871, 600 feet deep; no oil was obtained, but salt water and an abundant supply of gas. This gas supplies all household purposes, and heats malt chambers, steam boiler, etc., in the brewery.

At Conneaut and Painesville, Ohio, wells have been bored for gas with entire success, and others are being bored in these localities and at many points further west.

Of two of the Painesville wells, a few notes may be of interest to the residents of the lake shore. First; well of General CASEMENT on the east side of town. This well is 700 feet deep, and passed through the following materials:

One—Drift, clay and gravel, 40 feet.

Two—Erie shales, "soapstone rock," 648 feet.

Three—Huron shale, very black and bituminous, with strong smell of oil, 12 feet.

Gas was found in the Erie shale. The supply is abundant, and used for all domestic purposes in General CASEMENT's house. The pressure of the gas was tried, but at 27 pounds per square inch, part of the apparatus failed.

Second—Well at the Erie Seminary, 725 feet deep at the time of observation. Strata passed through:

One—Clay and sand, 23 feet.

Two—Erie shales, alternations of sandy and argillaceous gray and green shales, 687 feet.

Three—Huron shale, black and bituminous, 15 feet.

The gas was found in the fissures or crevices of the "soapstone rock." In the Seminary well four such fissures were found. Gas was first obtained at 300 feet.

Another well at the Seminary is of similar character. The supply of gas from both wells is insufficient to light and heat the building. If collected in a gasometer it would at least supply all the light required. —*Cleveland Herald.*

TO BE CONTINUED.

SANTO DOMINGO AND ITS RESOURCES.

By William M. Gabb, Geologist.

The Republic of Santo Domingo occupies about two-thirds of the island of the same name, which lies between Cuba and Porto Rico, and is the second largest of the Great Antilles. It is in shape an irregular triangle, with its greatest length from east to west, about 270 miles, and its base, about 150 miles long from north to south, abutting against the sister Republic of Hayti, which occupies the remainder of the island. Its area is about 20,000 square miles, or about the same as that of the State of Ohio; but, unlike Ohio, it is made up of a series of heavy mountain ranges and beautiful valleys, with just enough of prairie to break the monotony of forest and mountain.

The country is divided into two irregular portions by a chain of mountains, which commences at the eastern extremity and runs westward, gradually widens out and becomes higher, where it carries some peaks which reach an altitude of 8,000 to 9,000 feet. Throughout this range, but more especially where it is wider, there are numerous valleys, some of them high up in the mountains, as the valley of Constanza, some 4 000 feet above the ocean. At its eastern part, south of the bay of Samaná, the range is only about 20 miles wide, while nearer the Haytien frontier, north and northwest of Azua, it acquires a width of from 50 to 60 miles. Bordering the north coast, extending from Monte Cristi to the extremity of the peninsula of Samaná, is another range, parallel with the first, much narrower and lower. This chain is rarely over 15 or 18 miles wide, and, throughout its entire length of 150 miles, it is broken but once—at the point where the "Gran Estero" separates Samaná from the main body of the island. Its valleys are small but fertile, and, bordering the sea, its northern slope presents some of the most available sites for cultivation on a large scale that exist on the island. The peninsula of Samaná is topographically a prolongation of this range, but its geological features are entirely different; the soil, as a consequence, is better, and this, combined with a much greater rain fall, produce a marked superiority in its fertility.

Between the two mountain ranges runs a long valley, variously called the Cibao and the Vega; although these names are usually limited, the former to the western, the latter to the eastern end of the same valley. The Vega, or Vega Real, as named by Columbus, is without doubt the richest, most fertile, and most beautiful of the two; although in any other country, the valley from Santiago to Monte Cristi would be famous for the richness of its soil, the beauty of its scenery, and the natural facilities it offers for the transportation of its products. The valley is watered by the Yaqui river and its tributaries. These tributary streams, rivers of themselves, can be made to irrigate the whole southern side of the valley, besides transporting lumber from the mountains, and, perhaps, aiding the miner in the pursuit of the precious metal. The main river can be rendered navigable for small steamboats from its mouth, near Monte Cristi, to near the central emporium, Santiago. There is an abundance of water at all seasons of the year; there are no falls, and the few rapids which exist are simply gravel bars, which can be cleaned out and kept open by some such simple contrivance as "wing dams."

The eastern end of the valley is equally well supplied with rivers. The Yuna, with its great branches, the Camu and the Jima, could be readily, and with small outlay, rendered available for navigation; and here, owing to a greater fall of rain, irrigation is unnecessary. Droughts are unknown at the eastern end of the island.

The southern side of the island is very different from the parts just described. The mountains to the east of the Ozama river (at the mouth of which is located Santo Domingo city) are a narrow strip, and the whole area south of them is a broad grassy plain, bordered, along the coast, by a belt of forest. This region is well watered. Numerous streams, fed by the abundant moisture of the trade winds, take their rise in the hills, and cross these plains, furnishing an abundance of water for stock. One of them, the Macoris river, is so large as to be navigable for a distance of several leagues from its mouth. This is also the case with the Ozama river, small steamers having ascended it some five or six leagues above the city of Santo Domingo, while canoes go much further up on it, as well as on its tributaries the Yabacao and the Isabella.

West of the Ozama river, the mountains send spurs down almost to the coast, enclosing between them numerous and fertile valleys. Here, within a space of thirty miles, we have five large rivers and a perfect net-work of smaller streams. The rivers Ozama, Jaina, Nigua, Nizao, and Ocoa, with their tributaries, drain an area of about a thousand square miles. A large part of this (perhaps half) is a rough mountain region, abounding in valuable woods, and all of it with a soil and climate unsurpassed for coffee raising. The lower lands of this same tract, bordering the coast, are cut up by ranges of hills, which run down from the higher mountains, and form a succession of plain and rolling ground from one to ten miles wide. Still further west, beyond the Ocoa river, the character of the country changes. The climate is much drier, the soil on the plain is gravelly, and the streams are fewer. There is a broad valley, which extends from the bay of Ocoa northwest, towards the frontiers of Hayti, between the main mountain range on the north, and a lower range of hills on the south called the Sierra Baburuco. Away from the coast, this plain is less gravelly and more fertile, and formerly supported a large number of cattle. In one branch of the valley is the large lake of Henriquilla, and there are several good-sized rivers running through it. The broad peninsula to the south and southwest of this plain is almost a *terra incognita*, said to be a nearly continuous forest, abounding in precious woods, and inhabited by a very few half-savage negroes, the descendants of escaped slaves; and perhaps a few brigands, who take shelter in its fastnesses, to sally out occasionally and rob what they can of the few cattle left by the more open and systematic incursions of the Haytiens.

The commercial value of any region is very much influenced by the number and character of its harbors. In this respect, the Republic of Santo Domingo is well supplied. The fine bay of Samaná, nearly 30 miles long, and a dozen or more in width, cannot be rivalled by any in the West Indies. Its mouth is remarkably free of all ordinary dangers to the navigator and, once inside, vessels are immediately shielded against all except a due east wind, while the numerous headlands which project into it from the north, complete the shelter. The little side harbor of Santa Barbara, about ten miles from the mouth of the greater bay, is completely landlocked by high hills behind, a peninsula on one side, and a group of islands in front. This, on account of its easy accessibility, has become the emporium of Samaná, though there are a dozen other spots, almost equally available for shipping. Among these, the port of San Lorenzo, or "Pearl Bay" as it was called by the discoverers, on the south side, deserves at least a mention for the depth of its water, its area and its complete security. In case of any commerce growing up on the south side of Samaná bay, this place would probably rival, if not outstrip its neighbor, Savana la Mar.

Next to the bay of Samaná, perhaps that at the other end of the great valley deserves notice. Manzanilla bay is as yet entirely unknown to commerce. It is large, deep, commodious and easy of access; but Monte Cristi absorbs all of the little commerce of the region. While Samaná bay receives the mouth of the Yuna river, and is the natural outlet of all of the valley east of Santiago, Mazanilla bay in like manner receives the waters of the Yaqui, and can be easily placed in direct steam communication with Santiago, which is situated at the probable head of future steam navigation on that stream. But there is another possible future for this region. The bay of Monte Cristi is an excellent harbor, and as shown by the dry channels yet remaining, *it* once received the waters of the Yaqui. The government has just caused surveys to be made, and it is not improbable that before long the Yaqui river will be turned into its old channel with its mouth at Monte Cristi.

Besides the two fine harbors at the extremities of the Cibao or Vega valley, there are others on the north coast which must not be overlooked. That of Puerto Plata, while not to be compared with either of the two just described, is a good little harbor, and the one that does the great bulk of the business of the Republic. Here is the depot of nearly all of the tobacco trade, and here is the entrepot of nearly all of the foreign merchandize consumed in the interior. Here are located nearly all of the foreign merchants, and here is the most "wide awake" population. But all this life and activity is fictitious. Puerto Plata owes its importance to the fact that it is only forty-one miles from Santiago, notwithstanding that these miles are over an extremely rough mountain road. With the opening of either the Yaqui or Yuna rivers, or the less probable building of a railroad; in short with the preparation of any easier access to the coast, be it at Samaná or at Monte Cristi, the tobacco freight will go by the easier route, instead of over a mountain pass on a mule back, and the days of prosperity of Puerto Plata are numbered.

This result is anticipated by some of the merchants of that city, several of whom have already established branch houses at the rival ports; and one merchant, perhaps the largest house in Moca, now does all his business by way of the Yuna, carrying his freight in canoes, as high up the river as its natural facilities permit.

Besides Puerto Plata, there are many small harbors along the coast; Cabarete to the east; Maimon, Sufflet and Bianco to the west and, worthy of a special mention, Isabella, where Columbus founded his first colony.

Coming around to the south coast, the finest bay is, of course, that of Ocoa, a deep indentation of 15 to 20 miles across, shut in on three sides and open only to the south. This will one day be the port of a rich and populous sugar producing country, around and back of Azua. Opening into it, and forming really a part of it, is the port of Barahona. Just east of it is the harbor of Calderas, a land locked lake, several miles long, with a narrow mouth, very commodious, with deep water, safe of access and easy of exit.

Between the mouths of the Nigua and the Nizao rivers, is the little port of Palenque, not deep enough for large vessels, but admirably adapted for moderately sized coasters.

At the moth of the Ozama is a good roadstead and all vessels drawing more than 12 feet of water lie here, while smaller ones usually enter the river. The river front of Santo Domingo City has a depth of 15 to 18 feet though the bar at the entrance will not permit large vessels to enter. However, the roadstead is well sheltered except from south-westers, and vessels lie there with perfect safety.

In addition to the harbors already named there are many other smaller ones, such as at the mouth of the Macoris river &c., where coasting vessels ply regularly and which support quite an extensive coastwise commerce.

[To be continued.]

THE COAL TRADE.

NEW YORK, Oct. 11th, 1872.

The market is steady and even lively at the new rates, and shows itself perfectly able to maintain them. We no longer observe the exceptional demand which we noticed two or three weeks ago. That was a movement natural enough when an advance in prices was expected, but one which has, quite as naturally, passed away with the consummation of the advance. At present there is a pretty strong demand, and perhaps some of it is due to the fear that a new rise will take place, though we should think it more reasonable to ascribe the activity to a settled conviction that the market will sustain the advance that has already been made, and that dealers are content to accept the present rates, as above the danger of a relapse. There has been some talk of repeating the late movement on the first of next month, but the trade has not found all its courage yet, and it is doubtful if a second experiment will be made until we are able to be morally certain that the demand will sustain it. The recent improvement in prices was in no sense forced or schemed for. It was the natural result of circumstances, and was so cautiously made that it is possible a margin was left within which a supplementary rise can take place. It is still far too early to decide whether the scheme will meet with favor, and, indeed, whether it may even be regarded as a scheme, but the events of the next week or ten days will decide the question for November.

The average price last month has been found by the W. B. A. committee to be $2.09 per ton. Basis wages on $2.50 and $2 75 were paid.

The *Miners' Journal* makes some predictions as to the product during the remainder of this year. It says:

"The quantity of Anthracite mined in 1871 was, in round numbers, 17,685,000 tons. Of this quantity 14,965,501 tons were sent to market outside the Coal Regions. The balance was consumed in the Regions. The quantity of Anthracite that will be mined in 1872 will reach 22 300,000 tons, of which 19 000,000 tons will be sent to market outside of the Regions. This will give an increase of 4,000.000 tons sent to market, and an increase of about 60,000 tons consumed in the Coal Regions. The official returns at the end of the year will vary but little from the above figures. Notwithstanding the increase in 1872, prices have ruled ruinously low."

The Shamokin *Herald* reports the average for the month at $2.17½.

Business is also good in the Bituminous trade, and the advance is well sustained. The all through route from the Maryland mines to New York, by way of Pennsylvania and Amboy, was opened yesterday—Thursday. To those who desire to know what the profits on coal mining are at present rates, we commend the following estimate of expenses on board at Georgetown, made up by the President of the Chesapeake and Ohio Canal Company:

	Per Ton.
Cost of mining	$0 67½
Timber and machinery for track, dumping chutes and superintendence, and tramways and all other expenses, to place coal on board of cars at mines	25
Railroad freight and charges from mines to canal, average haul 23 miles, over grades 120 feet per mile	69
Wharfage at Cumberland	5
All other shipping expenses, agencies, taxes, etc.	2½
Toll by canal from Cumberland to Georgetown, 148 miles, ¼ cent per ton per mile	46
Boat freights, transportation charges, etc.	1 40
Transhipment, wharfage, agents, clerk's office, rents, etc., at Georgetown	30
Cost on board of vessels	$3 85
Add for royalty on the coal	25
	$4 10

Anthracite Coal Trade for 1871 and 1872.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending October 5, 1872, compared with the week ending Oct. 7, 1871.

COMPANIES.	1871. WEEK.	1871. TOTAL.	1872. WEEK.	1872. TOTAL.
*Phila & Reading R.R†	152,519	4,204,563	141,519	4,415,772
Schuylkill Canal	34,427	772,756	21,441	654,099
*Lehigh Valley R. R.	69,154	1,685,958	60,785	2,557,252
Lehigh & Sus. R. R.	33,943	921,741	38 065	1,335,134
Lehigh Canal	33,391	513,917	26,735	601,653
Scranton North	20,761	377,348	22,633	577 060
" South	28,917	8 6 051	35,128	1,631,292
Penn. Coal Co., rail	21,96?	598,764	27,191	916,717
" " canal	837	10,464	238	4,795
Del. & Hud. Canal Co.	....	699.2 0	....	1,030.003
" East	....	226,709	....	441,390
" West	....	78.056	....	295,283
" South	....	216 755	....	289.891
Shamokin	11,560	432,6?2	15,590	423,767
Trevorton	....	....	....	....
Lykens Valley Coal Co.	2,009	71.965	..	2,085
Wyoming North	...	.....	....	....
Wyoming South	....	.....	....	....
P. N. Y. C. & R. R. Co.	....	104.987	13,336	488,819
Williamstown Col'y	....	....	....	....
Big Lick Col	3,275	113,791	....	10,591
Total	428.762	11,828,403	402,459	15.715.293
1870	402,459			11,828,403
Increase				3,886,890
Decrease	26,303			

* These figures are for the week and fiscal period commencing Nov. 30.

†Less coal transported for Co's use and Bituminous coal.

Bituminous Coal Trade, 1871 and 1872.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Oct. 5, 1872, compared with week ending October 7, 1871.

COMPANIES.	1871. Week.	1871. Year.	1872. Week.	1872. Year.
C. & O. Canal	17,747	537.255	16,877	502.196
B. & O. R. R.	21.427	949.267	26,486	952,346
H. & B. T. R.R.	5,970	241,379	6,313*	224,154
*Harrisburg & D.	9,159	424,627	10,332	389,629
*L. V. R. R.	8,548	308,199	507	22,580
P. & N.Y.C. & R. Co.	....	.....	6,296	289,867
Cumberl'd Branch Canal	5,042	157,326	4,490	170,491
" Railroad	1,713	55,264	1,337	15,522
Total	69,606	2,673,317	72,638	2,566,527
		2,566,527	69,606	
Decrease		106,790		
Increase			3,032	

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, Oct. 5, 1872.

BY RAILROAD—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons.	Cwt.
From St. Clair	38,709	16
" Port Carbon	5,471	04
" Pottsville	3,466	0
" Schuylkill Haven	22 863	08
" Pine Grove	4.741	16
" Tamaqua	15,626	15
" Harrisburg	4	00
" Dauphin	6,803	10
Total	97,686	09

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	8,383	08
" Mill Creek "	2,261	01
" Schuylkill Valley Scales	175	00
" Mt. Carbon "	1.124	00
" Cressona "	10,155	04
" Pine Grove "		
" Tamaqua "	2,419	13
Total	24,518	04

SHIPPED WESTWARD VIA NORTHERN CENTRAL RAILROAD.

Passing Locust Gap	3,330	02
" Shamokin	6,475	10
" Herndon	.....	
Total	9,865	12

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R.	870	19
" Lebanon & Pine Grove Branch	1,401	16
Total	2,272	15

CONSUMED ON LATERALS.

From Frackville Scales	731	07
" Mill Creek "	542	00
" Schuylkill Valley Scales	1,113	13
" Mt. Carbon "	1,163	01
" Cressona "	503	08
" Pine Grove "	101	15
" Tamaqua "	1,003	10
Total	5,158	13

LEHIGH AND WYOMING COAL.

Received via Allentown, E. Penn'a Br.	271	02
" " Alburtis, "	24	10
" " Oreland, G. & N. Br.	1,116	04
" " Connecting R. R.	.....	
" " Willow Street R. R.	605	16
Total	2,017	12

BITUMINOUS.

From Harrisburg	10,321	19
" Connecting R. R., G. & N. Br.	.....	
" Junction R. R.	10	00
Total	10,331	19

COAL FOR COMPANY'S USE.

Anthracite	5,665	07
Bituminous	250	12
Total	5 915	19

RECAPITULATION.

	Total for Week.	Corresp'g week last year.	Increase and Decrease.
Passing over Main Line and Leh. Val Branch	97 686 09	108,103 06	d 10,416 17
For Shipment by Canal	24,518 01	32.143 08	d 7,625 04
Shipped Westward via Northern Central R. R.	9,865 12	4,290 03	i 5,575 08
Shipped West or South from Pine Grove	2,272 15	2,567 03	d 294 08
Consumed on Laterals	5,158 13	3,436 03	i 1,7 2 10
Lehigh and Wyoming Coal	2,017 12	1,9.9 03	i 38 09
Total Anthracite paying freig't	141,519 05	152,519 07	d 11,000 02
Bituminous	10,331 19	9,159 07	d 1,172 12
Total of all kinds paying freig't	151,851 04	161,678 14	d 9,827 10
Coal for Company's use	5,912 19	4,183 12	i 1,732 07
Total Tonnage for Week	157.767 03	165.862 06	d 8,095 03
Previously this year	4879414 00	4646673 14	i 232,740 06
Total to date	5037181 03	4812536 00	i 224,645 03

SHIPPED BY CANAL.

From Schuylkill Haven	19 815 20	26,753 15	d 6,938 15
" Port Clinton	1,796 00	3,648 00	d 1,852 00
Total Tonnage per Week	21.611 20	30 401 15	d 8.79 15
Previously this year	632,658 05	755.372 12	d 122,714 07
Total to date	654,269 05	785,774 07	d 131,505 02

Northern Central Railway, Shamokin Division.

Below is the return of Coal sent over the Shamokin Division of the N. C. R. W., for the week ending October 5, 1872.

	Tons.	Cwt.
East	2,433 19	
West	12,955 12	
		15,389 11
Same time last year		11.599 13
Increase		3,789 18
Decrease		.....
Total amount shipped to date		423,767 08
Same time last year		492,601 11
Increase		.....
Decrease		68,344 03

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending October 5, 1872.

	1872. WEEK.	1872. YEAR.	1871. WEEK.	1871. YEAR
By Railway	27,191 09	916.717 00	27,969 09	508,754 05
" Canal	238 02	4,795 08	837 08	10,464 06
Total	27,429 11	921,512 08	28 806 17	519,218 11
Increase 1872	402,293 17			

Lehigh Coal and Navigation Company,

Report of Coal transported over the Lehigh Canal and L. & S. Div of Central Railroad of New Jersey for the week ending Oct. 5, 1872, and for the year 1872.

	WEEK.	YEAR.
Forwarded East of M'ch Chunk by Rail	38,065 00	1,335,133 18
Delivered at and above do.,	1.615 05	45,987 13
Forwarded East of do., by Canal	26,732 14	601,652 11
	66,412 19	1,982,774 02
Corresponding period last year—		
Forwarded East of M. Chunk by Rail	33 942 18	921,790 16
Delivered at and above do.,	1,439 17	46 292 10
Forwarded East of do., by Canal	33,391 02	513,917 03
	68,773 17	1,482,000 09
Increase on Railroad	4,297 10	413,038 05
Decrease " "	.....	.....
Increase on Canal	.....	87,735 08
Decrease " "	6,658 08	

Of the above there was transported on account of—

Lehigh Coal Nav. Co.	23 579 11	703,186 13
Wilkesbarre Coal & Iron Co.	20,079 08	769,401 03
	45,658 19	1,472,587 16
Corresponding period last year—		
Lehigh Coal & Nav. Co	22,376 09	419,070 02
Wilkesbarre Coal & Iron Co.	18,092 18	647,680 02
	40,469 07	1,066 750 04
Increase	5,189 12	405,837 12
Decrease	.....	

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Oct. 5, 1872, with totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons.	WEEK. Cwt.	TOTAL Tons.	TOTAL Cwt.
Total Wyoming	10,365	10	433 667	12
" Hazleton	45,37	00	1,854,335	09
" Upper Lehigh	33	17	2,348	14
" Beaver Meadow	18,435	11	645.054	16
" Mahanoy	8,266	15	317,775	12
" Mauch Chunk	5	05	2.449	14
Total	82,537	18	3,255,631	07
Same time last year	95,233	11	2.118,413	14
Increase			1,137,217	13
Decrease	12,695	13		
Forwarded East from Mauch Chunk by rail	60,784	16	2,557,251	12
Same time last year	69,154	01	1,685 957	14
Increase			871,293	18
Decrease	8,369	04		

DISTRIBUTED AS FOLLOWS.

Forwarded East from Mauch Chunk by rail	59,789	09	2,517,799	04
do East for use L. V. R. R.	995	07	39,452	08
Delivered at and above Mauch Chunk for use of L. V. R. R.	924	00	47,733	17
To P. & N. Y. R. R.	8,176	03	302,427	11
To N. C. R. R., at Mount Carmel			2,156	05
To D. H & W. R. R.	1 107	16	24.112	01
To L. & S. R. R. at Packerton for rail	284	09	10,840	10
Delivered at M'h Chunk	81	11	1,570	09
Delivered on line of road above Mauch Chunk	211	07	13.144	11
To L. S. & R. R., at Penn Hav., for railroad	10	10	4,011	19
Do for canal	6.903	15	185,426	17
To Lehigh Canal Mauch Chunk	3,970	04	97,329	19
To Catawissa Railroad			9,625	16
Total	82,537	18	3 255,631	07

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Susq. Div.)

Week ending October 5—Compared with same time last year.

WHERE SHIPPED FROM	WEEK 1872, tons ct	WEEK 187-, tons ct.	YEAR 1872 tons cwt.	YEAR 1871, tons.cwt.
Wyoming Region	36988 04	31509 12	1146518 09	949396 15
Upper Lehigh Region	4332 05	3905 18	154040 07	65167 05
Hazleton Region	7254 09	7249 03	192468 03	139692 13
Frescokow Region	4914 06	3409 13	121163 01	49186 17
Mauch Chunk Region	8502 16	6469 11	341919 13	156078 10
Beaver Meadow Region				
Mahanoy Region				
Totals	60650 00	60133 17	1955599 13	1358202 00
Increase	516 03		59397 13	
Decrease				
DISTRIBUTION.				
Forwarded East of Mch Chunk by Rail	38065 00	33942 18	1335133 18	921790 16
Forwarded East of Mch Chunk by Canal	16735 15	20940 19	388338 11	293697 05
Delivered at and above Mauch Chunk	1615 05	1439 17	45987 13	46292 10
L. V. R. R at Packer'n	277 05	510 06	11176 05	25233 01
Delivered to L. & B. R. R. at Plymouth Bridge	4656 15	3299 17	173963 06	71183 08
Totals				
Of the above there was transported on acc'nt of L. C. & N. Co.	14865 01	11460 11	504557 03	227699 06
W.-B. C. & I. Co.	22079 08	18002 18	769401 03	647680 02
Totals	36944 09	29553 09	1273958 06	875379 08
Increase	7391 00		398578 18	2xxx
Decrease				

Schuylkill Canal.

Report of coal transported over the Schuylkill Canal for the week ending Saturday, October 5, 1872.

	Tons.	Cwt.
From Schuylkill Haven	19,815	00
" Port Clinton	1,626	00
Total for week	21.441	00
Previously this year	632,658	05
Total	654,099	05
To same time last year	772,756	07

Penn. and N. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending October 5, 1872.

	Week. Tons. Cwt.	Total. Tons. Cwt.
Anthracite received:		
Lehigh Valley R. R.	8,176 00	302.427 11
" Lack. & B. R. R.	1 234 04	64,849 09
" Pleasant Valley R. R.	2,417 18	78 929 01
" Sul. & Erie R. R.	1,509 02	42,662 05
Total	13,335 14	488,859 06
Distributed:		
To Lehigh Valley R. R.	522 12	31,161 09
To Lack. & B. R. R.	5 11	1 023 06
To S. Central R. R.	3,039 06	20.3 4 13
To Ithaca & A. R. R.	1.734 12	76,439 01
To Erie R. W. Pockets for shipm't.	5,400 13	223,556 16
To individuals on line of road.	934 12	17,582 10
To points at & above Coxton for use of Co.	534 13	19,751 10
To points between Waverley and Elmira.	1,159 15	28 976 19
Total	13,335 14	438,819 06
Bituminous received from BARCLAY R. R.		
Shipped north from Towanda.	6,265 06	287,570 13
Shipped south from Towanda.	31 00	2,083 07
Northern Central R. R.	.....	215 10
Total	6,295 06	289,867 10
Distributed:		
To Erie Railway	5,730 04	259,174 03
To So. Central R. R.	535 02	28 209 05
To Ithaca Valley R. R.		57 05
Lehigh Valley, R. R.	31 00	1,201 01
To individuals on line of Railroad.	....	970 12
To points on line of road for use of Company	....	255 04
Total	6,296 06	289,867 10
Grand totals transported:		
Anthracite	13,335 14	488.859 06
Bituminous	6,296 06	289,867 10
Total	19,632 00	778,726 16

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, October 5, 1872.

	WEEK.	SEASON.
North	52,22 02	1,970 1?5 04
South	7,320 12	296,911 08
Total 1872	59,544 14	2,267,036 12
Corresponding time in 1871:		
North	55,342 10	1,062,572 15
South	10,850 18	229,606 02
Total	66,193 08	1,292,178 17
Increase North		
Decrease North		
Increase South		
Decrease South		
Total increase 1872		974,857 15
Total decrease 1872	6,618 14	

Lehigh Canal Coal Trade.

Shipped for the week ending September 4, 1872.

	Week. Tons. Cwt.	Week. Tons. Cwt.
Total from Mauch Chunk Region	8,714 10	198 6/9 10
" " Hazardville "	1,201 02	1,999 02
" " Beaver Meadow "	4,976 19	121,316 09
" " Mahanoy "	191 06	8,530 15
" " Hazleton "	5,903 15	184,960 10
" " Upper Lehigh "	884 08	22 800 17
" " Wyoming "	3,860 14	62,355 08
Total	26.732 14	601,051 11
Corresponding week last year	33.391 02	513,917 03
Increase	.....	87,735 08
Decrease	6,658 08	

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Oct. 5. and during the year 1872, compared with the corresponding period of 1871.

WEEK.

	To C & O. Canal Tons. Cwt.	To B &O. R R. C. Tons. Cwt	Total. Tons Cwt.
1872	16,877 07	26.4 5 13	43,3?1 00
1871	17,747 00	21 427 02	39,174 02
Increase		5,058 11	4,188 18
Decrease	869 13	.....	

YEAR.

1872	502,194 01	952.345 12	1,454,541 13
1871	537 254 15	949,286 15	1,486,521 10
Increase		3,078 17	
Decrease	35,053 14		31,979 17

Cumberland Branch R. R.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To P.&O.R.R. Co Tons. Cwt.	Total. Tons. Cwt
1872	4,489 17	1,336 15	5,876 12
1871	5,042 01	1,712 11	6,754 12
Increase	.....		
Decrease	552 04	374 16	928 00

YEAR.

1872	170 '91 12	15,521 16	186.012 08
1871	157,325 13	55,263 18	212,589 11
Increase	13,164 19		
Decrease		39,742 02	26,577 03

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna, & Western Railroad for the week ending Saturday, Oct. 5, 1872.

	WEEK. Tons. Cwt.	YEAR. Tons. Cwt.
Shipped North	22,632 12	577,059 19
Shipped South	35.128 06	1,621,291 13
Total	57,760 18	2,198,349 12
For the Corresponding time last Year:		
Shipped North	20 760 12	377,347 18
Shipped south	38,916 15	8.6,050 17
Total	59,677 07	1,203,338 15
Increase		994,960 17
Decrease	1,916 09	

Delaware and Hudson Canal Company.

The following is a statement of Coal Transported by the Delaware and Hudson Canal Co. for the week ending Sept. 28, 1872.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	42,?40	1,080,903
By Railroad, East	8,792	441,380
" " West	11 531	295,283
" " South	10,555	289 591
Total Tons	73,718	2,106,207
For the same period last year.		
By Delaware and Hudson Canal,	46 350	699,930
By Railroad, East,	8 791	226,709
" " West	4 276	78 056
" " South	12,300	218,755
Total Tons	71,817	1,223,450
Increase	882,757	

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK. October 11. R. A.	W. A.	AT PHILADELPHIA. October 11. R. A.	W. A.
SCHUYLKILL.				
Lump	$- —	$- —	- —	
Steamer	- —	- —	- —	- —
Broken	- —	- —	- —	
Egg	5 25	4 75	- —	- —
Stove	5 50	5 00	- —	- —
Chestnut	4 25	—	- —	
Pea	- —	- —	- —	- —
LEHIGH.				
Lump, (along side)	5 35	—	- —	- —
Broken	4 60	- —	- —	- —
Egg	4 60	- —	- —	- —
Stove	4 85	- —	- —	- —
Chestnut	4 35	- —	- —	- —
Pea	- —	- —	- —	- —
SPECIAL COALS.*				
Honey Brook, Le'h W.A.	4 00@5 00		- —	- —
Spring Mountain " "	- —@- —		- —	- —
Sugar Creek " "	- —@- —		- —	- —
Sugar Loaf " "	- —@- —		- —	- —
Old Comp'y's " "	4 00@5 15		- —	- —
Room Run " "	4 00@4 50		- —	- —
McNeal " "		- —	- —	- —
Girardville " "		—	- —	- —
Hill & Harris " "		- —	3 10@4 00	- —
Shamokin " "		- —	- —	- —
Lykens Valley " "		- —	- —	- —
Broad Top " "		- —	- —	- —
McMichael " "		- —	3 25@4 25	- —
Henry Clay " "		- —	- —	- —
Powelton " "		- —	- —	- —

Company Coals.

October, 1872.

	L.	Str.	Gra	Eg.	Sto	Chest
*Scranton at E. Port	3 45	3 45	3 65	3 70	4 00	3 50
*Pittston at Newburg	3 80	3 80	3 80	3 80	4 00	3 80
*Lackawana at Weehawken	4 01	4 10	4 10	4 30	4 00	3 60
Wilk'b're at Hoboken	3 60	3 65	3 85	3 85	4 60	4 10
Old Co. Lehigh at PtJohn'n	5 25	—	4 50	4 50	4 60	4 00
Lehigh at Eliz. Port	5 00	—	4 60	4 60	4 80	4 00

For freights to different points see "Freights."
To contractors only.

Prices at Baltimore—October, 1872.

Wholesale Prices to Trade.

Wilksbarre, by cargo or car load	$5 20@5 35
Pittston and Plymouth, do	4 90@5 15
Shamokin Red or White Ash, do	5 10@5 35
Lykens Valley Red Ash, do	6 00
Zerba Valley	
Freverton	
By retail, all kinds per ton of 2,240 lbs	6 50@8 00
George's Creek and Cumberland f. o b. at Locust Point for cargoes	@4 75
Fairmont and Clarksburg gas f. o. b. at L. Point	6 00

BITUMINOUS COALS.

Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$
Lemon " " "	
Cumberland Vein Coal	
Consolidation Coal Co.'s on board N. Y.	
Maryland Co l Co "	

Prices at Georgetown, D.C., and Alexandria, Va.

October, 1872.

George's Creek and Cumberland f. o. b. for shipping $4 25@4 35

Prices at Havre de Grace, Md.

October, 1872.

Wilkesbarre and other White Ash for Cargoes	$ @5 00
Lykens Valley	@6 00
Shamokin Red or White Ash	4 75@5 00

Bituminous Coals (Cumberland).

Georgetown, F.o.b	$4.25
Baltimore	4.65
New York	6.60

Prices of Gas Coals.

October, 1872.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y

	Coarse	Slack.
Block House	$1 60	$- 75
Gowrie	1 60	— 75

Vessels are being chartered at $3 00 to $3 25.

Corrected by Bird, Perkins & Job, 27 South street.

	Coarse	Culm of Coal.
Pictou	$2 25	1 25
Sydney	2 25	- 80
Langan	1 60	- 80
Caledonia	1 60	- 80

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty on all slack coal or Culm: 40c. per ton of 28 bushels, 80 pounds to the bushel. On all bituminous coal or shale: 75 cents per ton of 28 bushels.

AMERICAN.

	Currency.
Westmoreland	$7 10 @- —
Fairmount Gas Coal Co. of N. Y.	7 00 @- —
Despard Coal Co.	7 00 @- —
Penn.	7 10 @- —
Newburg Orrel Gas	- — @- —
West Fairmount Gas Coal	7 00 @- —

AT PHILADELPHIA.

Westmoreland	7 00 @- —

Prices of Foreign Coals.

October, 1872.

Duty 75 c. per ton.

Corrected weekly by ALFRED FARMELE, No. 32 Pine street, N. Y

Liverpool Gas Caking	$ 8 00@- —
" " Cannel	12 00@13 00
" House "	19 00@20 00
" Orrel	14 00@16 00

Per ton 2,240 lbs., ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$14 00@16 0
"Cannel, "	19 00@23 0

Per ton 2.000 lbs. delivered.

Freights.—October, 1872.

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore	Anthracite. From Philadel'a.	Anthracite. From Elizabeth Port, Port Johnson, and Hoboken.	Anthracite. From Newburgh.	Anthracite. From Rondout...
Amesbury		2 75				
Bangor		2 75				
Bath	2 60	2 75				
Boston	2 60	2 60		2 00	2 15	2 25
Bridgeport	2 35	2 35		1 05	1 20	1 35
Bristol				1 45	1 60	1 70
Cohasset Nar'ows	2 60					
Derby	2 50			1 25		
Dighton	2 40					
East Cambridge				2 00	2 15	2 35
Fall River	2 30	2 35		1 45	1 60	1 75
Hackensack	2 25					
Hartford	2 50	3 00		1 55		
Hoboken	1 90			60		
Jersey City	1 90			60		
Lynn					2 15	
Middletown				1 40		
Mystic	2 60	2 75		1 35		
New Bedford	2 35	2 50		1 45		1 75
Newburyport	2 50	2 90		2 00		2 40
New Haven	2 25	2 25		1 05	1 20	1 25
New London	2 25	2 35		1 30	1 40	1 50
Newport	2 25	1 90		1 45	1 60	1 70
New York	2 05	1 9		60	60	65
Norwalk	2 50	2 50		1 05	1 20	1 75
Norwich	2 30	2 50		1 40	1 50	1 60
Pawtucket	2 8.	2 60		1 55	1 70	1 75
Portland	2 70	2 50		1 80		
Portsmouth, N.H	2 80	2 80		2 15	2 30	
Providence	2 25	2 35		1 40	1 60	2 40
Rockport						1 75
Saco						
Sag Harbor	2 85	3 00		1 30		
Salem	2 60	2 75		2 00		
Stamford				1 05	1 20	
Stonington				1 35		1 25
Taunton				1 95		
Warren				1 45		
TO RIVER PORTS						
Albany	3 00					
Catskill						
Cocksackie						
Coeyman's						
Cold Spring	2 30	2 25				
Fishkill						
Haverstraw	2					
Hudson	2 30			•		
New York						
Nyack	2 25					
Poughkeepsie	2 25					
Rhinebeck						
Rondout						
Saugerties						
Sing Sing						
Stuyvesant						
Tarrytown						
Troy	3 00					
West Point						
Yonkers						

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven for consumption (?1 85 less 55c" drawback	$1 30
For reshipment	1 75

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 66
C. R. R., N. J., Phillipsburgh to Elizabethport	0 98
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$1 99

MAUCH CHUNK TO PORT JOHNSON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 66
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	0 98
Shipping expenses	25
Wharfage	
Total	$1 99

TO HOBOKEN.

L. V. R. R., Mauch Chunk to Phillipsburgh	66
Morris & Essex R. R. Phillipsburgh to Hoboken	0 98
Shipping expenses	25
Wharfage	0
Total	$1 99

TO SOUTH AMBOY.

L. V. R. R.	66
B. & D. R. R.	66
Cam. & Am R. R.	98
Shipping Expenses	35
Total	$ 199

PENN HAVEN TO ELIZABETHPORT.

L. V. & R. Penn Haven to Phillipsburgh	0 78
C. RR. of N. J. Phillipsburgh to Elizabethport	0 98
Shipping expenses	25
Wharfage	10
Total	$2 11

Foreign and Provincial Freights.

October 1872.

Foreign.
Newcastle and Ports on Tyne, per keel of 21 1-5 tons £
Liverpool, 5 per cent primage

TO NEW YORK.

Provincial.

Sydney	$3 05
Lingan	3 50
Cow Bay	3 75
Port Caledonia	3 10
Little Glace Bay	3 00

TO BOSTON.

Sydney	3 00
Lingan	3 00
Cow Bay	3 00
Port Caledonia	3 00
Little Glace Bay	2 90

MARKET REVIEW.

NEW YORK, Oct. 10, 1872.

IRON—The market for Scotch Pig has relapsed into a very quiet state. Holders are as firm as ever, but in the absence of any large demand from consumers, but little has been done. Private advices from the other side, under date of 21st ult., mention a difficulty in obtaining prime No. 1 brands, and 167s. 6d. as having been paid for No. 1 Co tness, prompt delivery, while quantities could not be obtained, except at full figures, and though the market generally has a firm tone, an uneasy feeling for the future seems to prevail. Abou. 1500 tons principally Summerlee and Glengarnock, have arrived since our last, about three-quarters of which has been sold, part before arrival—the particulars are say 100 tons Eglinton at $53,50 60 days, 75 do. Gartsherrie $57, 300 do. Summerlee $56a57, 100 do. Glengarnock on private terms; 4a500 do. various brands at about quotations, and 90 tons Eglinton to close an invoice, at $53.50. No. 1 Foundry American is firm at our figures, while Gray Forge is more plenty, and with stocks somewhat accumulating, prices are scarcely so strong, and we only hear of 250 tons No. 1, delivered at Hoboken, at $55. New English Rails are quiet at $73a75, gold, and American $85a87,50 currency, at the mills in Pennsylvania, with sales of 3700 tons of the latter on private terms. Old Rails are in very large supply, and though we quote nominally $47a48 gold, which is lower than for a long time past, buyers still hold off showing no disposition to operate to a large extent—we note sales of 1400 tons on private terms. Scrap continues weak and prices are unsettled—we quote $45a46 from dock, and $47 49 from yard, with sales of 125 tons from dock at $45, and 500 do. for Baltimore on private terms. Refined Bar from store is rather steady at old figures, but the feeling is barely so confident, as a few weeks ago—business only moderate.

PHILADELPHIA, Oct. 7.—(From Circular of Edward Samuel.)—Raw Iron, if pressed for sale, would not command quoted prices. American Refined Bar Iron for future delivery is weaker, and orders can be placed below quotations. Below are the closing prices:—American No. 1 Foundry Pig, at Furnace, $53a55; No. 2, $50a52; No. 3 Forge, $46a48; No. 4 White and Mottled, $42a44.

A late Liverpool paper says;—In consequence of the high price of Iron, a check has been given to the demand for constructive ironwork, and the substitution of other materials for iron is resorted to wherever practicable. The Wolverhampton letters state that the iron trade has lately been quiet. As a rule the iron masters have sufficient orders to complete to absorb their produce for some little time. The current quotations for Pig Iron are £8 for best brands, £6 for Cinders, and £9 5s. for best cold blast Shropshire brands. In finished Iron Bars average £14 10s. at the second class houses, but the leading houses quote fully 30s. higher. Sheets at £20a£21 for Singles are a shade easier. The general tendency in prices is less firm. The price of coal is fully maintained, and in some instances a further advance is asked. Another paper says:—A well informed an trustworthy correspondent in Lanarkshire, informs us that the unprecedented prosperity of the malleable iron trade is threatened with a sudden collapse, in consequence of the slackness of orders this month, and the continued rising of the prices of Pig Iron and coal. We understand that two large works have already given their men the usual fortnight's notice without any further stipulation in the meantime that their services will be continued, unless, indeed, they may be retained on a day's warning. With regard to the coal, it may be stated that the last alleged "rise" of 3s. 6d. per ton appears to have been a "dodge" on the part of the agents who have bought heavily, and there is nothing noted here in regard to it.

COPPER.—New Sheathing is steady at 43 cents and Bolts and Braziers' 45. We noted in our last the reduction in the price of Yellow Metal Sheathing to 27 cents; the decline is owing to the abolition of the duty under the new tariff on this article when used upon vessels engaged in the Foreign trade. Yellow Metal Bolts are not effected, and the price remains as before, 32 cents. Ingot is dull, weak and irregular; the demand is very limited, and the English market is lower; late London cables quote Chili Bars 82s.a85s., and Best Selected 84s.a95s., with rumors of still easier prices. Sales have been made of 150,000 lb. Lake in lots at 32½a34¾ cents, considerable parcels offered at 32¼, and English can be bought at 30 cents, time. 1800 lb. old American Brass Cannon sold at 32 cents.

LEAD—Foreign Pig is very quiet, and we hear of no sales; common is held at 6¾ cents gold. Bar 9¼ cents, Sheet and Pipe 11, and Tin-lined 16½, less 10 per cent to the Trade.

STEEL—The market continues steady at our quotations.

SPELTER—Is without demand, and prices are entirely nominal at 6¾a6¾ cents gold for Silesian.

TIN—Pig is without movement; hitherto, the expectation has been that after the Dutch sale the market would show some signs of animation, but so far the result of the sale has been utterly without effect, and there seems to be no disposition to operate among any interest. In the meantime prices are wholly nominal at 33¼a33¾ cents for Straits and English, 39a40 for Banca, gold. The market for Plates is also at a stand, and the business is confined to small jobbing parcels from store at, and about, the rates previously current. For round lots prices are nominal, and tend rather buyers' favor.

ZINC—Mosselmann Sheet is in fair jobbing demand, at our currency quotations, which are shaded a little—agent's price 9½ cent less 4 per cent. gold. Manganese black oxide 4 cents, Pyrolusite gray 6 cents.

METALS.

NEW YORK, October 10, 1872.

IRON.—Duty: Bars, 1 to 1½ cents ₩ lb; Railroad, 10 cents ₩100 lbs.: Boiler and Plate, 1½ cents ₩ lb; Sheet, Band, Hoop, and Scroll, 1½ to 1¾ cents ₩ lb; Pig, $7 ₩ ton; Polished Sheet, 3 cts. ₩ lb; Galvanized 2½; Nail Rod, $6; Scrap Wrought, $8 per ton. All less 10 per cent. No Bar Iron to pay a less duty than 35 ₩ per cent. ad val.

	Store Prices.
Pig, Scotch—Co'tness ₩ ton	$0 00 a61 00
Gartsherrie	57 00 a58 00
Glengarnock	54 00 a55 00
Eglinton	52 00 a53 00
Pig, American, No. 1	56 00 a57 00
Pig, American, No. 2	53 00 a54 00
Pig, American, Forge	48 00 a49 00
Bar Refined, English and American	115 00 a120 00
Bar Swedes, assorted sizes gold	120 00 a130 00
	Store Prices, Cash.
Bar, Swedes, 1¾ to 5 x ⅜ & ⅞ 2 sq. & 6 to 12 x ¾ & ⅛	145 00 a155 00
Bar, Refined, ⅞ to 2 in. rd. & sq. 1 to 6 in. x ½ to 1 in.	— —a120 00
Bar, Refined, 1¼ to 6 by ¼	125 00a— —
Bar, Refined 2½ to 2¾ round 1 & 1⅛ by ¼ & 5:16	127 50a— —
Large Rounds	127 50a140 00
Scroll	140 00 a170 00
Ovals and half-round	140 00 a160 00
Band	— —a135 00
Horse Shoe	130 00a140 00
Rods, ⅝ to 3-16 inch	125 00 a165 00
Hoop	145 00a190 00
Nail rod	—a 9
Sheet, Russia, as to assortment (gold)	17¼a 17½
Sheet, Singles, D. and T. Common	—7½a— 8½
Sheet, D. and T. Charcoal	—8½a— 9
Sheet, Galv'd, list 10 per cent discount	—a— —
Rails, English (gold), ₩ ton	74 00 a 75 00
Rails, American, at Works in Pennsylvania, currency	85,00 a 87 50

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ₩ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₩ lb	—a— 43
Copper Bolts	—a— 45
Copper Braziers, 16oz. and over	—a— 45
Copper Nails	—a— 45
Copper, Old Sheathing, &c. mixed lots	26 a— 28
Copper, Old, for chemical purposes, 14@16 oz	—a— —
Copper English Pig	30 a— —
Copper, American Ingot	32¼a— 32¾
Yellow Metal, New Sheathing & Bronze	—a— 27
Yellow Metal Bolts	—a— 32
Yellow Metal Nails	27 a— 30

LEAD.—Duty: Pig, $2 ₩ 100 lbs.; old Lead, 1½ cents ₩ lb; Pipe and Sheet, 2¾ cents ₩ lb.

Galena, ₩ 100 lbs	$— a— —
Spanish (gold)	6 62½a— —
German, do.	6 62½a— —
English do.	6 62½a7 00
Bar (net)	9 25 a— —
Pipe (net)	— —a11 00
Sheet	— —a11 00
Colwell, Shaw & Willard Tin-Lined Lead Pipe 16½ cts. ₩ lb.	

STEEL.—Duty: Bars and Ingots, valued at 7 cents ₩ lb or under, 2¼ cents; over 7 cents and not above 11, 3 cents ₩ lb; over 11 cents, 3½ cents ₩ lb, and 10 ₩ cent ad val. (Store prices.

English Cast (2d and 1st quality) ₩ lb	— 16¼a— 20
English Spring (2d and 1st quality)	— 9½a— 10½
English Blister (2d and 1st quality)	— 11½a— 16
English Machinery	— 11½a— 13½
English German (2d an 1st quality)	— 11½a— 12
American Blister "Black Diamond"	— —a— 11½
American, Cast, Tool do.	— —a— 17
American, Spring, do.	— —a— 11
American Machinery do.	— —a— 11½
American German, do.	— 9 a— —

TIN.—Duty: Pig, Bars, and Blocks, 15 ₩ cent. ad val.; Plate and Sheets and Terne Plates, 25 ₩ cent.; Roofing 25. ad val.

	Gold ₩ lb.
Banca	39 @40
Straits	33¼a33½
English	33¾a33½

PLATES.

Fair to Good Brands.	Gold.	Currency.
I. C. Charcoal, ₩ box	$13 00 @— —	$15 25 @15 50
I. C. Coke	11 75 @12 00	14 25 @— —
Coke Terne	10 50 @11 00	12 25 @— —
Charcoal Terne	11 50 @12 00	13 00 @13 50

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign (gold) p. 100 lb.	6 75 a 6 87½
Plates, Domestic p lb.	8¾a— 11

ZINC—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c. per ₩ lb

Sheet per lb.	— 10¼ a 10½

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, Oct. 10, 1872.

The following report from the San Francisco Stock Board is dated the 8th inst. Without exception the market has advanced, the advance averaging almost a third over our quotations dated the 2d inst.

		Oct. 8.	
Savage	—	96	—
Crown Point	—	118	—
Yellow Jacket	—	92	—
Kentuck	—	—	—
Chollar Potosi	—	54	—
Gould & Curry	—	178	—
Belcher "New Issue"	—	95	—
Imperial	—	10½	—
Hale & Norcross	—	—	—
Eureka C. V.	—	—	—
Ophir	—	—	—
Alpha	—		—
Raymond & Ely	—	156	—
Meadow Valley	—	25	—

MISCELLANEOUS.

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For further information address

B. W. FRAZIER,
Professor of Mining and Metallurgy.

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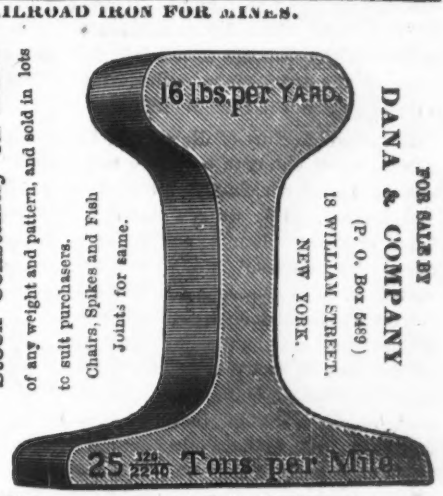

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American Architecture.

There is probably no subject on which Americans have been more preached at than the construction of their houses. RUSKIN has condemned our cities to eternal flames, and if there was any man who rejoiced when Chicago burned, he was probably the one. It is impossible to deny that we have deserved all we have suffered from the critics. A Parthenon done in wood was the type of our former taste in building. But there is no less doubt that there has been real progress in this matter and a progress, too, that must express a national preference, for it is by no means along the path to which our teachers directed us. Simplicity was their cry; but there is nothing we have less of. In the numerous buildings going up in our cities there are evidences of selection, and whether bad or good, the fact that there is a selection, and that it is commonly in one direction, proves that the American has his own ideas of what is suited to his country.

In fact, the day of imitation has passed, and the architect is expected to be, to a fair extent, original. We do not invent a new order of architecture with each new building, and we seem to have rejected the especially American style of decoration that was invented for us so many years ago. Nevertheless, we no longer build the Pantheon when we want a custom house, nor the Parthenon for an Exchange. In the progress of this change from servility to independence in architecture, much work has been done that is probably worse than we should have had under the old system of imitation, but, nevertheless, while nothing satisfactory is to be expected from an era of dull copying, much is to be hoped from the labors of men who strive to make architecture an expression of thought. There are buildings in the world which are so unmistakeably the embodiment of a delicate sentiment, that the furthest stone of the cornice is in visible artistic conception with every detail in the foundation.

In the architecture of New York, both public and private, color enters to a degree unknown in most cities. The city is chiefly built of brick, sandstone, and granite. But we can recall at this moment brick of three distinct colors, sandstone of four colors, and granite of two. These are the common materials. For dressings blue stone is much used; a blood-red sandstone is gradually gaining in favor; we have seen a green serpentine worked in, and the natural tone of brown sandstone is sometimes deepened by a coat of oil. An occasional building of white marble heightens the chequered appearance of our streets, and we have left iron out of our list altogether, because house builders do not seem to have found a good mode of treatment for it. Dinginess seems to be thought its natural hue, while on the other hand a few buildings made of it are so painted that they look like the advertisement of a tea company. But its future is undoubtedly one which will add real graces to the gayety of our streets.

We look upon this leaning to the use of color with favor, because we believe it is really the expression of a taste that is native to the American. Our clear weather preserves the first freshness of a building so long that we grow up amid bright appearing walls, that in other countries would have been dingy within ten or even two years. This peculiar freshness offended the eye of DICKENS, who came from the dingiest of modern cities, and he seemed to think the buildings had all been constructed the year before, and deserved the contempt which is so often the portion of *parvenues*. But the American approves gayety of color, and only asks that it shall be in good taste.

New York has progressed from the impudence of paint to the honesty of contrasted brick and stone. As yet our choice has been only in what may be called the commoner building materials, the sandstones and ordinary marbles. But the end of a growth like this will undoubtedly be the use of the colored, or so called "precious" marbles. We may look forward to the time when, in obedience to the natural demands of taste, the New Yorker may build the finest marble into his outer walls without suffering the imputation of being luxurious. We may have a city formed of as brilliant a collection of palaces as old Venice could boast of, a city that shall be gaudy without offense, being the natural expression of a taste for bright objects under bright skies. Our country affords abundant means for supplying in the best materials this demand for color. In marble and other stone we can obtain almost any shade, from pure white, through yellows, drabs, light reds, intense blood reds, to black, with all kinds of markings and stripes. If this use of color in outer walls continues, quarrying will be one of the great industries of the country. Venice and Rome were forced to obtain their marbles by conquest or purchase. Ours will come from our own hills.

As we remarked before, there is nothing that the Americans have been twitted so much about as their architecture, but it is by no means impossible that the day will come when travellers will anticipate the sights of an American street, as curiously as they now do those of an Eastern town. The growth of taste from the wooden temples of our past history to the genuine floridness of contrasted stone work, has not been along the paths it was supposed we would tread. What we build to-day, we build in deference to strongly marked principles, and the end will be an architecture, distinctly national, though its parts are conned from many nations.

Statistics of the Iron Industry.

The completed returns of the ninth census, just sent to press, show the following facts in regard to the several branches of iron industry in the United States during the year ending June 1, 1870:

Pig Iron.—386 establishments, 574 blast furnaces (with a daily capacity of 8,357 tons melted metal), employing 27,554 hands, producing 2,052,821 tons of pig, of the value of $69,640,498.

Bloomary Forges.—82, employing 2,902 hands, producing 110,808 tons of blooms, of the value of $2,765,623.

Foundries.—2,653, employing 51,297 hands, and producing to the value of $99,837,218.

Forges.—102, employing 3,561 hands, and producing to the value of $8,147,669.

Establishments producing bar, rod, and railroad iron, nail, plate, etc., 309, employing 44,643 hands, and producing to the value $120,301,158.

The Santo Domingo Survey.

We commence this week the publication of a sketch of Santo Domingo by Professor GABB, the geologist of the Island. It is really a condensed report upon the resources and topography of that important island, and gives in a less minute form the conclusions which will be expanded more liberally in the regular report of the survey not yet published. Santo Domingo promises to play an important part in the future history of our country. Though the government has been once defeated in an effort to annex it, the defeat was not based on anything which forbids our resuming that battle hereafter. Our own statesmen differed about the expediency of the step, but the people of the Island have never expressed any feeling hostile to connection with us. On the contrary, the Commission which was sent out to ascertain their views reported that they seemed strongly inclined to favor annexation. The question was therefore narrowed down to the disposition of our own statesmen and people toward the measure. As we have said the former were divided, but the people of this country have never manifested any opposition to the scheme, but, on the contrary, it is very probable that they would sustain the government in offering annexation to the Islanders, if it is done in a way to leave them perfectly free to decide their own destiny.

The acquisition of one of the West Indies has long been a favorite plan among our statesmen. Probably every one of those who have been connected with the executive branch of the government, and have had experience of what our country requires as a maritime power would be found on the side of the promoters of this enterprise. The annexation of some island in the South Atlantic is necessary to furnish us with a proper base of operations for our fleets, and the efforts that have been made within the last five years to obtain St. Thomas and Santo Domingo show what importance is attached to the question. We are not arguing in favor of the proposed annexation, but we do hold the opinion that it will take place, basing our belief upon the oft expressed convictions of leading statesmen, and also upon the attitude of our people during the somewhat excited discussion among the politicians in Washington when the government made its attempt to obtain Santo Domingo. A measure that has been cherished for so many years, that is so consonant with our pretensions as a people, and that is looked upon by so many as one of the certainties of the future, may well be considered as sure to triumph sooner or later.

Under these circumstances the government of Santo Domingo determined to have the Island thoroughly explored. A geological and topographical survey commenced in 1868, and ended with 1871, three full years having been given to the work, by from six to eight men. An area of 20,000 square miles was thoroughly examined, and triangulated, while all the principal roads and the accessible parts of the coast were chained. Professor GABB had charge of the geology, having one, and sometimes two assistants. The results of this survey are an accurate knowledge of the country and its possibilities; a carefully made topographical map on the scale of 5 miles to the inch, with the geology colored in upon it; and finally a manuscript report of 300—400 pages, which will probably be published soon. As we have said, this larger report is anticipated in the paper which we commence this week.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The dues for the year ending May, 1873, are now payable. All members and Associates who have not paid their dues are requested to do so at once, by sending in postal orders, or checks, or money, ten dollars to the Secretary.

All members and Associates who pay their dues for each current year, strictly in advance, will have sent to their address, regularly and weekly, the ENGINEERING AND MINING JOURNAL, which is the organ of the Institute, and will contain the proceedings and transactions, and all important papers read before the Institute and all notices of meetings. Back numbers cannot, as a general rule, be sent.

II. It is expected that the more important papers read before the Institute, and the debates thereon, will be published in annual or occasional volumes to which those Members and Associates will be entitled who have paid their dues.

III. All authors of papers are requested to notify the Secretary in advance of the meetings, giving the subject and length of their papers. Attention is also called, in this connection, to Rules 12 and 13.

IV. The ninth rule has been amended, so that there will be hereafter three meetings a year, in February, May and October.

Wilkesbarre, Pa. MARTIN CORYELL, Secretary.

The next meeting of the Institute will be held at Pittsburgh, Pa., Wednesday, October 16th, at 8 o'clock, P. M.

The Monongahela House is designated for members to assemble at. The place of meeting will be the Western University.

The objects of interest in and about the City of Pittsburgh are so many and so diversified, that they cannot all be visited, and the selection will be mostly left to the members.

A meeting of the Council will be held at 11 o'clock A. M., Wednesday, October 16th, at the Monongahela House, and promptness is urged for the disposal of important business. By order of the Council,

MARTIN CORYELL, Secretary.

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.,
JOHN A. CHURCH, E. M.
Editors.

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The Two Meetings at Pittsburgh.

The American Pig Iron Manufacturers' Association meets at Pittsburgh to-day, and the meeting of the American Institute of Mining Engineers will begin in the same city to-morrow (Wednesday) evening. We regard this conjunction as highly significant for both societies, and we trust the occasion may be improved to the benefit of both. Their aims are kindred, though not identical. The former association has been established to effect unity of action in all matters pertaining to the pig iron interest in the United States. The object of the latter is the advancement of the whole mining and metallurgical industry of the country; and, very naturally, the subjects of iron, steel and coal, occupy at present the larger share of its attention. The manufacturers, while they deliberate concerning their commercial interests, must feel that the topics discussed by professional men, affecting the economy of manufacture and the quality of product, are no less important to them than questions of tariff and price, demand and supply; and the mining engineers and metallurgists, on the other hand, while they busy themselves with the process of crystallizing science out of practical experience, and to determine how the thing *ought to be*, must value highly the assistance of those who "know how it *is*, themselves." The distinction is, indeed, not a sharp one; every capitalist engaged in such pursuits ought to be, in some degree, a man of science, and (with a thrill of deep sincerity we say it) would that every man of science were a capitalist! The truth is, the members of the Pig Iron Association should connect themselves also with the Institute; and we hope that the proceedings at Pittsburgh will be of such a character as to rouse their interest and secure their coöperation. Already several papers of great interest, relating to iron ores, pig iron, coal and coke, have been promised for the meeting; and everything points to a most interesting and profitable session.

Members of the Institute cannot afford to miss this meeting; and if any of them can manage to go to Pittsburgh (as we mean to do) a day earlier, and attend the other, we think they will be repaid.

The strength of the Pig Iron Association may be seen from the fact that the furnace companies connected with it number 66, and report a product for the first seven months of the year of 364,019 tons from 95 furnaces. This shows that the Association numbers among its members the producers of about one-third our iron. Indeed, it now comprises theoretically all the furnace companies, and we presume that the Pittsburgh meeting will show a fuller report. Its statistics at present are as follows:

STATES.	No. of Companies Reporting.	No. of Furnaces.	No. in Blast.	Product first six months, 1872.	Product for July. Tons.	Product first seven months, 1872. Tons.
Massachusetts	1	1	1	2,526	.....	2,526
Connecticut	1	2	2	3,501	.....	3,501
New York	4	6	6	24,143	2,916	27,059
New Jersey	1	2	2	10,104	2,128	12,232
Pennsylvania	21	42	42	167,131	25,693	192,824
Maryland	2	3	3	1,550	212	1,762
West Virginia	1	1	1	3,520	708	4,228
Alabama	1	1	1	2,823	378	3,201
Tennessee	1	2	2	769	113	882
Kentucky	2	4	2	945	808	1,753
Ohio	23	30	26	67,713	16,396	84,109
Michigan	5	5	5	12,221	2,158	14,379
Indiana	3	3	3	8,813	1,868	10,681
Wisconsin	2	1	1	550	579	1,129
GRAND TOTAL	66	100	95	307,254	54,765	364,019

University of Pennsylvania.

We return thanks to the Trustees of the University of Pennsylvania for a courteous invitation, which we were unfortunately unable to accept, to be present at the Inauguration of their new and magnificent building, on Friday, Oct. 11. The ceremonies of the afternoon and the social reunion beneath the same stately roof on Friday evening, pleasantly ushered in a new era for the University, and, we may fairly add, for Philadelphia. We confidently trust that the fair body which has now been provided for this honored school may be inhabited henceforward and forever by an enthusiastic, active and fruitful spirit.

Colorado Coals.

We print in full, in justice to Prof. E. T. Cox, of Indiana, his letter with reference to analyses of western lignites. If we have done him any injustice, we sincerely regret it; and we give him the benefit of his counter-statement (though it is not quite just to us) without indulging in any criticism upon minor points.

But we still think that his published analyses of Western coals have given erroneous impressions with regard to their availability for metallurgical purposes, and particularly as to their coking qualities. The following analysis of coal from South Park, Colorado, is the most striking instance, and the one which (though not mentioned in our article of Sept. 17), was in our mind when we wrote the remark of which he complains.

"COAL FROM SOUTH PARK, COLORADO.

"Specific gravity, 1.254. A cubic foot weighs 78.37 pounds. Coke (consisting of ash, 2.00 and fixed carbon, 55.58) 57.58; Volatile matter (consisting of water, 4.50, and good illuminating gas 37.92) 42.42; total 100.00.

"This coke is dense, vitreous and laminated, and the gas burns with a brilliant white flame. This is the best coal from Colorado which has yet come under my notice. It is excellent for steam and household purposes, and will make a coke suitable for metallurgical, and all the various uses of the mechanical arts. The gas, although not so abundant as in the best varieties of coking coals, is of good quality, and may be made available for lighting up the mountain cities. If in a thick bed, which covers a considerable area, accessible to railroads, this coal will prove a rich boon to Colorado."

(Signed), E. T. Cox,
State Geologist of Indiana.

Now, a personal examination of the locality and the mine from which these samples were taken, and a considerable familiarity with all the coals of the Rocky Mountain region, and with the results of the experiments which have been carried on in the manufacture of coke from them justify us in saying that the South Park coal, so far as it can be judged in the present limited development of the mine, will not yield a coke "suitable for metallurgical purposes and all the various uses of the mechanical arts." In so saying, we do not mean to impugn Prof. Cox's accuracy as a chemist, or his ability as a geologist, nor even his knowledge of this subject as a specialty. What we do mean is, that he has pronounced an opinion, upon the result of the analysis of a single, probably a small, sample, which will not hold good in practice on a large scale. In other words, excellent coke has frequently been produced in a small way, in the laboratory, from specimens of the Rocky Mountain coals; and the same coals have not yielded good coke when tested on a commercial scale.

Concerning the expression of our desire that Prof. Cox's analysis of Canon City coal had been "more trustworthy," we have a word to say. First, we withdraw the remark and apologize for it, in the sense which he considers its to bear; secondly, we renew it, in a sense which we mean it to bear, and which, we hope, will not prove offensive to him. We cannot believe that the Canon City coal contains but 4.50 per cent. of water, on the authority of a single analysis, made at so great a distance, by a chemist, who cannot personally vouch for the representative character, or the identity even, of the sample; and we wish the point was conclusively settled by repetition and corroboration of the test.

Let us add, in all kindness and esteem for Prof. Cox, that his sweeping opinions and prophecies, based on slender data, of which we have given a specimen above, are likely to be misunderstood by the public, who, accepting them literally, and sup-

posing them applicable to actual practice, may fall, as some have fallen, into delusions and disappointments.

EDITORIAL CORRESPONDENCE.

The Pioche Mines.

[CONTINUED.]

SAN FRANCISCO, Sept. 16, 1872.

The rapidity of my movements, and the pressure of active, out-door duties, have prevented me until now from continuing my remarks upon the mines of Pioche; but the importance and interest of the subject forbid that I should let it pass entirely, without some further words.

These mines are situated in a range of hills running nearly east and west—contrary to the usual meridional direction of the mountains of Nevada. The immediate country-rock is quartzite, dipping northward; but an anticlinal passes along the northern face of the mountain, above which (topographically speaking) the rocks dip south. The elevation on the two sides of the anticlinal has not been equal; and the result is, that the rocks on the two sides correspond neither in character nor in position. On the north, we have the quartzite, dipping in that direction; on the south, a belt of magnesian shale, lying steeply and closely across the edges of the quartzite strata, and above this shale, heavy beds of limestone, also dipping south. The principal silver-bearing vein is in the quartzite, and courses not far from the anticlinal, with a general parallelism; but dips south, from 50 to 80 degrees. It is beyond doubt a fissure. So far as it can be studied from present developments, this vein branches into two, as it is followed eastward; and both these branches have been extensively and productively worked. To gain some notion of the relative position of the mines, let the reader imagine himself standing at the point of bifurcation, and looking north. Behind him rises the mountain, before and below him clusters the town of Pioche, and beyond that the wide prospect of a vast valley, bounded by mountain ranges far away. To the right, the two divergent branches of the vein are thickly set with shafts and hoisting works. They differ in their course about 20 degrees. To the left (west) the single vein continues, barring a break, caused by a barren cross-course of brecciated material, mischievously interjected by Nature to help the lawyers. The different claims lie on the surface as follows: West of the bifurcation, the Meadow Valley company holds 340 feet; east of the same point, the same company holds 1520 feet on the north branch, and 460 feet on the south bran h, making, in all, 2320 feet of continuous mining ground, through the whole of which the workings of the company extend, constituting a magnificent mine.

Next to the Meadow Valley line on the west, comes the Panacea mine of the Raymond and Ely company, covering, I believe, 600 feet, and containing the most remarkable body of high-grade ore now to be seen on this coast.

On the east, beyond the Meadow Valley line on the south branch, we have the Washington and Creole, 200 feet, and the Burke, Creole and Vermillion mines of the Raymond and Ely company, covering, I believe, about 1500 feet. On the north branch, beyond the Meadow Valley line, comes the Pioche company's ground, about 400 feet. Finally, there are on both ends and hovering about the claims enumerated, countless "extensions" and adventures, which help to make things "lively" in the district; and high up on the hill, sometimes even in the limestone, hopeful and enterprising people are digging and boring into the bowels of things, and hoisting much rock. Among the outside mines of notoriety, concerning which I do not feel like giving any opinion, are the Sunbeam, Excelsior, Bowery, American Flag, Chief of the Hill, Desdemona, Huhn and Hunt, Alps, Spring Mountain, etc. Some of them are reported to be making money. I can vouch that they all make more or less noise.

To return to the two principal mines. The Meadow Valley was for awhile the leading enterprise of the district; and the large amount and the favorable location of its ground still secures to it a long lease of life. But it is not denied that for the past year its brilliant prospects have waned into temporary eclipse. That is to say, the reserves of rich ore have been reduced without the development by explorations of equivalent resources for the future. The superintendent reports, August 10th, 4,500 tons of first-class ore in the developed sections of the mine, of the gross value of $360,000—about three months' work at the usual rate for the mill. At the time of my visit, however, the mine had assumed a more promising appearance at several points, and particularly in the bottom, at a depth on the vein of 750 feet—the deepest point yet attained in Pioche—where a body of rich ore, of unknown size, had been penetrated for a few feet. It is a curious illustration of the sensitiveness of the San Francisco stock market, that the discovery of this body, before anything had been learned as to its size and value, being reported secretly by spies to parties in that city, caused a rise in the stock which represented an increase in the valuation of the mine of nearly a million dollars.

Since I arrived at San Francisco, there has been a panic and a fall in the stock, probably as groundless as the previous inflation had been premature. As a great deal of stock changed hands, and many people lost money, there was much wrath, seeking for a victim; and the victim appears to have been my friend Captain DAY, the superintendent of the mine, who is abused because the stock went up, and also because it came down again. He has tendered his resignation, which has been accepted. I do not attempt to judge the case; but, in the absence of personal knowledge, I can scarcely believe that Captain DAY would engage in secret speculations in the stock of a mine which he was superintending. The practice is indeed too common among mining superintendents on this coast; and a sad proof of its commonness is the fact that no man is so upright as not to be, at some time or other, suspected and accused of it.

The Raymond and Ely, as all the world knows, is now the leading mine of Pioche. The older claims of this company, on the south branch, viz: the Creole, Burke and Vermillion, have had their day. It was not an extraordinarily brilliant day, at the best; and whether it will ever dawn again is uncertain. Of course, there are possibilities "in depth;" but at present, no ore is extracted from them. It is the Panacea mine, away west of the bifurcation, and separated from the other property of the company by the intervening ground of the Meadow Valley and the Washington and Creole, which now forms the basis of the almost unexampled prosperity of the company. The vein does not here come to the surface at all. The Lightner shaft, sunk vertically, and almost at random through the magnesian shale, crossed the anticlinal, and entering the quartzite, struck immediately the upper edge of the vein, and developed a body of rich ore which has produced already some $2,000,000, shows as much more in the reserves now standing, and gives as yet no sign of approaching termination in depth. The length of the body in the 5th level (vertical depth 423 feet) is upwards of 550 feet; its height thus far developed is 335 feet; and its thickness varies from one to four feet of first-class ore—assaying on the average, say, $150. The mills, treating 90 tons daily, produce from $11,000 to $13,000 every twenty-four hours. The ore contains chloride of silver, with carbonates of lead and various of the true silver ores. The Meadow Valley ore has been similar, but baser and poorer.

What reflects most credit on Mr. LIGHTNER'S management of the Raymond and Ely is, however, not the richness of the mine, for that is sheer luck; but the fact that, *in spite of its richness*, it is worked with care, economy and skill. We are accustomed to see mines in *bonanza* butchered, and their proceeds squandered. There is no doubt that the Raymond and Ely, instead of paying regularly, as now, $210,000 monthly in dividends, could be so pushed as to pay, for a while, a much larger amount, and the stock could be driven up from 170 (representing $5,100,000 for the whole,) to above $200 per share. But the normal rate of extraction for a mine is determined by the rate at which shafts can be sunk and new levels opened in depth, not by the ease with which existing stopes can be stripped; and this principle Mr. Lightner bears in mind, refusing always to force the work of extraction for the sake of temporary profit. The result is great steadiness in the value of the stock, and confidence on the part of the stockholders, whose interests are not made the foot balls of the street.

But I must stop here, though there is much more in my note-book and on my mind which I would I had time and room to say. R. W. R.

Professor Cox's Coal Analysis.

TO THE EDITOR:—Sir—My attention has been called to an editorial article on Colorado Coals in the last number of your JOURNAL (Sept. 17th, p. 185). In this article you take occasion to make a very unwarrantable criticism of an analysis made of the Canon City coal by Prof. COXE, in connection with the analysis of a specimen of the same coal by Dr. DROWN. You refer the reader to page 121, of the August number, for the analysis. Here I find the proximate analysis of the Canon City coal and accompanying remarks as made by me, but with the name of F. Cox, State Chemist, Ind., attached, instead of my proper initials, E. T. Cox. Now, notwithstanding the discrepancies in the name in the two articles on the Colorado coals, I made the analysis there given and referred to, under my proper name and have no desire to disown it.

In the fall of 1871, Hon. EDWARD KING, of Indianapolis, made a visit to Denver City, and collected specimens of coals from various mines in Colorado and Wyoming Territories. These samples were presented to me, and without any renumeration or further interest in the matter than a desire to gratify my friend, and at the same time promote the general welfare of the country, and advance my own scientific knowledge of coals, I undertook these analyses. The samples were kept in the warm Laboratory room until time was found for these analyses in the winter; this may have had some influence in diminishing the amount of water and increasing the carbon?

In your criticism you say "A reference to our article on page 121, Aug. 20th, will show that there are some discrepancies in the results of the coal analyses by Dr. DROWN and Prof. COXE (Cox). It will be noticed that Dr. DROWN does not determine the proportion of water, and that Prof. COXE puts it at the incredibly low figure for a lignite of 4·50 per cent. It is to be wished that the analysis of the former had been more extended and that of the latter more trustworthy. *This is one of several cases in which Prof Coxe has pronounced upon the coking qualities of Western lignites opinions which practical tests have hitherto utterly failed to confirm.*"

Mr. DROWN'S statement with regard to the physical character of the fixed carbon *is directly opposed to that of Prof. Coxe*, and is in accordance with the partial experience thus far gained."

In a letter addressed to Col. C. W. FISHER, of Denver City, and dated July 1st, 1871, I gave the following report of the analysis of the Canon City brown coal together with the analyses of other coals; this is the only statement regarding this coal which has ever emanated from me:

"Canon City coal 200 miles south of Denver City, Brown coal, color jet black, contains no seams of calcite.

Specific Gravity 1,279.		A cubic ft. weighs	79·23 lbs.
Coke,	61·30	Ash, ochre yellow	4·50
		Fixed Carbon	56·80
Volatile matter	38·70	Water	4·50
		Gas	34·20
	100·00		100·00

Coke: slightly swollen, unchanged, semi-lustrous. This is one of the best brown coals I have seen. As

a fuel, it is equal to some of the best bituminous coals, the ash is not very great for this character of coal, and the fixed carbon is remarkably large."

Analysis of Canon City coal by THOMAS M. DROWN taken from this journal of August 20th, page 121:

Volatile matter,	40·65
Fixed Carbon,	53·69
Ash,	5·66
Total,	100·00
Sulphur,	·59

"The fixed carbon left after driving off the volatile ingredients by heat is sandy in its character, without the slightest tendency to form a coherent coke. The superior adaptability of this class of *non-coking* coals used in the raw state for iron smelting has been fully proven, and there can be no doubt that the coal in question will be found equal to the best of its class. The very small percentage of sulphur in this coal still further recommends it as an iron smelting fuel." (The *italics* throughout are my own).

In classifying coals I use the terms employed in DANA'S Mineralogy, and in the proximate analysis names for the products generally employed by the best chemists.

Thus the bituminous coals are divided into *caking* (not coking) and *non-caking*. The fixed residue after burning off the volatile matter from a weighed portion of the coal in a covered platinum crucible at a bright red heat is called the *coke*, and by deducting the ash from this we get the *fixed carbon*. The moisture is determined, in my laboratory, by drying the coal at 212° F. for half an hour.

Caking coals are the coals generally used for making coke on a large scale for fuel. Now by the word "unchanged" in my remarks "*coke: slightly swollen, unchanged, semi-lustrous*," the fact is pointed out that the coke resembled in form the shape of the piece of coal operated upon, in other words *non-caking*.

The coke of caking-coals is puffed, porous and of irregular form.

In the analysis above referred to I gave the exact result obtained from the specimen of coal examined and I deny having made any reference to the character of this coal for making coke fuel, and your assertion to the contrary has no foundation in fact, as every intelligent chemist will see. The proximate analyses of Indiana block-coals show a large amount of coke unchanged in form, and I have never contended that by the usual form of coke ovens, that its coke would make a good fuel.

Seams of coal are never of uniform quality, and hand specimens taken from a seam may show a very marked difference in chemical composition, as you admit in your article (p. 185, Sept. 17th.,) when you state that in one instance *some* coke was obtained by an experiment in a gas retort, and *none at all* in another. This wholesale way of stating scientific facts when trying to throw discredit upon the honest work and carefully stated results of another, will strike the well-informed chemist with far greater astonishment than the slight difference in results obtained by Dr. DROWN and myself from different specimens of coal, though obtained from the same seam. The specimen I examined was handed to me as stated in the original communication and not collected by myself, so that I, personally, know nothing of the coal in place.

Add the ash to the fixed carbon in Dr. DROWN'S analysis and you have 59.35, being 1.95 less than I obtained, and he has 1.16 more ash and 1 95 more volatile matter. All geologists and chemists are well aware that some parts of a seam of coal will give more ash, volatile matter and coke than other parts.

My analysis of Canon City coal shows it to be a good fuel, and you should have given me credit for having first called public attention to the fact, instead of misrepresenting and casting insinuations regarding the reliableness of my analysis, and then proceeding to praise the quality of the coal and call in the corroborating testimony of Dr. DROWN. Had you simply confined yourself to the mere assumptions of your article, for you have made or given no evidences of a scientific investigation bearing on the character of the coal, no notice would have been taken of your statements. But when you step to one side without any sustaining facts to misrepresent and question my ability and integrity as an analyst, I feel called upon to reply, and I trust that after reading this statement of facts regarding my analysis and remarks on the character of the Colorado coals, made from specimens collected and presented to me by Col. FISHER and Hon EDWARD KING, that you will have no hesitation in setting me right before your readers.

Yours truly,
E. T. COX.
State Geologist of Indiana.

INDIANAPOLIS, September 26, 1872.

Estimation of Phosphoric Acid by Bismuth.

The process of DR. CHANCEL (estimation of phosphoric acid by means of bismuth) is modified by the author in the following manner:—To the chlorhydric solution of the substances in which the phosphoric acid is to be estimated, hyposulphite of soda is added first, so as to reduce the peroxide of iron to protoxide; next, nitrate of bismuth is added, and the vessel containing the substances heated for about four hours upon a water-bath. The precipitate which is formed is filtered off after twenty-four hours, and after having been well washed is dissolved in nitric acid. The chlorhydric and sulphuric acids present in this solution are next first eliminated by means of nitrate of silver and nitrate of baryta, while the phosphoric acid is afterwards thrown down by means of nitrate of bismuth. The phosphate of bismuth precipitate is collected on a filter, washed, and lastly dissolved in chlordydric acid and estimated as ammonia-phosphate of magnesia in the presence of citrate of ammonia. This process may even be employed when the substance contains fifty times more alumina than phosphoric acid; but if the proportion of alumina be very large, it is best to add to the substance a weighed quantity of pure phosphate of soda. If the iron might happen to be present in very large excess, it is necessary to re-dissolve the first bismuth precipitate and re-precipitate it a second time.—A. ADRIAANZS, in *Journal de Pharmacie.*

MINING SUMMARY.

Idaho.

From the Owyhee *Avalanche* of Sept. 28.

GOLDEN CHARIOT.—We visited the Golden Chariot this week, and found the general prospects of the mine much better than they have been for a long time past. Recent developments show very favorably indeed, especially in the south portion of the mine, where nothing of much value had hitherto been found. The 5th level was run in last fall and winter to a distance of 354 feet south of the shaft, and only 150 feet stoped out, leaving about 25 feet of unprospected ground. At the south end of this level, viz., 354 feet from the shaft, they have now raised up some fifteen feet, striking a vein fully two feet wide, it only having been about six inches in the bottom of the level. It assays well, and, for anything that is known to the contrary, may extend to the surface, in which case there will be a splendid show for taking out unlimited quantities of ore. The 9th level north drift is now in 20 feet, and it is daily expected to strike the ledge. The south drift in the same level is in 10 feet without striking the ledge. The 8th level drift north is in 60 feet, leaving 45 feet to run before reaching the Ellmore line. In this drift the ledge is 3½ feet wide, but not far enough from the break to determine its richness. The winze is down 45 feet, showing a good vein from 18 to 24 inches wide. They are now running a drift 40 feet below the 8th level to intersect the winze, and here also the ore looks well. The shaft is not making near so much water as anticipated, and the mine is now comparatively dry and comfortable to work in. In the matter of skips, buckets and hoisting facilities generally, the Golden Chariot is far ahead of any other mine in camp.

LATER FROM THE CHARIOT.—Yesterday, after the above was in type, the information came that they had cut the ledge in the 9th level drift south, and that it looks well.

IDA ELLMORE.—This mine is now turning out between 15 and 20 tons of splendid high grade ore per day. Since the completion of the dam in the 6th level cross-cut, they are enabled to do a large amount of work on ore and development of the mine. We visited the mine this week and found a winze going down rapidly for the 9th level some 70 feet north of the main shaft. So far the ledge has only been cut into in one place, showing a fine quality ore. In the south drift stopes the ledge is 4 to 5 feet wide, and in the north stopes the ore is good. This body of ore seems to lay under and north of the great "slip" that carried the old deposit of ore into the Chariot. Should this new development prove to have been formerly connected with the body of ore south of the "slip" (and such is not at all unlikely) Ellmore stock will be eagerly sought after and considered cheap at $60 per share. It is now selling far below what it is worth on its actual merits. A crushing of 88 tons was had at the Company's mill last week, out of which ten bars of bullion, valued at $5,000, were forwarded to the San Francisco office. This amount of ore was mined at small expense, and sent to the mill with comparatively but little assortment. The sixth level drift is being driven ahead and may be expected to strike rich ore any time. Stoping has been commenced between the 6th and 7th levels, with fair prospects. Under the present management, we feel confident that, before long, the Ellmore will be on a dividend paying basis. We notice that proposals for bids to sink the main shaft are now posted up. They now have a snug office, and a conveniently arranged blacksmith shop and carpenter shop completed at the mine, besides an abundance of wood, timbers and lumber laid in for winter.

WAR EAGLE.—This mine continues to make a good report. Work is being pushed forward with all possible dispatch. The shaft is now 90 feet below the 4th level and shows a 30-inch vein of same character as reported last week. It is expected that the shaft will be deep enough to start the 5th level during the coming week. The sinking will be continued, however, for the next level. The winze in the 4th level 80 feet from the shaft, is down 11 feet, showing a 4-foot vein, all good milling ore similar to that in the shaft. The stopes in the 3d level carry a vein from 18 to 30 inches in width. Four hundred tons of ore in the last crushing from this portion of the vein averaged $35 per ton, and that now being taken out is of the same grade of richness. We saw in the ore-house about 125 tons ready for the mill, and learn that there is already 160 tons on the mill yard. They commenced crushing yesterday and will probably continue without any further interruption. We questioned the Superintendent as to the probable amount of ore the mine would yield, when the 5th level is fairly opened: "30 tons per day as long as we can carry the present sized mine," was the ready answer—"in fact," said he, "we have not commenced to mine yet, and will not be in shape to do lively work till after the first of November."

MINNESOTA.—This mine is attracting considerable attention, owing to the rich ore found in the winze about 170 feet south of the shaft. They have had it in the winze for the last 15 or 20 feet, but said nothing about it till lately, when the miners began to send for stock. In a conversation with the Superintendent about it yesterday, he said that they have exceedingly rich ore, but added that it had pinched out on him so often that he wanted to demonstrate it further before making any noise about it. The rich place is two feet wide, and foreman Schmitt says that they have never had so good a showing in the Minnesota as at present.

FLINT DISTRICT.—The miners working in the Rising Star mine have been somewhat excited the last day or two over the rich ore found in the Boyd shaft, and all think that they have a big mine. The rich ore here referred to is in the drift going south which had "petered," but now comes in again, richer than ever. The Superintendent was over a couple of days ago, but does not seem to be moved much by rich ore "coming in" or "going out." While there he examined the Leviathan mine where Fred Warnkee is taking out ore that will mill $30 a ton. He thinks that the rich ore in the Leviathan is pitching south, and will eventually find its way into the Rising Star.

EMPIRE.—This mine is turning out splendidly—no lack of ore to keep ten stamps constantly at work crushing, and the great beauty of it is, that it gets better as they go down in the shaft, which is now 65 feet below the second level, going down at a rate of 10 feet a week. The Empire is in fair condition, and has probably more stoping ground opened than any other mine on War Eagle Mountain. The second level drift running north is getting some Poorman indications, and should it run into a

body of ore like old time Poorman, it will only be what many of the miners are looking for.

SOUTH CHARIOT.—Stoping has commenced in the 4th level where we saw some good looking ore. Drifts have been started in several portions of the mine, and the main shaft is going down at a rapid rate for the 6th level.

FLORIDA MOUNTAIN.—We have not yet been able to visit Messrs. Douglas & Leonar's new quartz discovery on Florida Mountain, mentioned in out last, but understand that the boys have got a big thing.

MAHOGANY.—The 6th level of this mine continues to yield exceedingly rich ore. Superintendent McFadden left for San Francisco last Saturday, leaving Colonel J. P. Owens in charge of the mine.

BULLION SHIPMENT.—Wells, Fargo & Co. shipped from here, during the week ending yesterday, 10 bars of bullion, valued at $20. 551 22.

THE MINES GENERALLY.—The general mining prospect of the camp is decidedly better than it has been for years past.

RED JACKET.—In this mine the large adit level is going ahead with all possible dispatch, averaging two feet per day.

RED MOUNTAIN.—We understand that this mine has recently been incorporated in San Francisco.

Arizona.

From the San Francisco *Bulletin* of Sept. 27:

As the furore of excitement, which attended the reported discovery of diamonds in Arizona begins to die away, under the dampe fluence of reports of "salting," London negotiations etc., it may not be amiss for a personal observer to cast his "blanket," however diminutive, upon what we believe to be an enormous swindle. In company with a gentleman, who has spent several years in South America, and has had ample opportunities of observing both the diamond mines of Brazil, and, also, with a well known geologist, the writer hereof travelled over and through the "Diamond" and "Ant Hill" regions, looking for diamonds, rubies, etc., but in vain. Diamonds and rubies,—to the unpracticed eye—we found; but, alas, the diamonds paled into quartz crystals, and the rubies into garnets. The crystals are some of them very beautiful, perfectly transparent, and presenting a five-sided form of crytallization, very nearly approaching to the four-sided of the diamond, but easily detected by the most simple means. In vain did we search for the pregnant, ever-present *itacolumite*, but no trace of it could we discover, while the fanciful diamonds were found dispersed through various formations, granite, sandstone, limestone, basalt, etc., and the writer of this has now in his possession several specimens of "diamonds upon diamonds," and the whole formed upon, and adhering to, silicified wood. But enough; for we cannot say positively that there are no diamonds in Arizona, but we give it as our candid opinion, that, if diamonds have been taken out of Arizona gravel, *that gravel was salted beforehand*, and to those having the "fever" we would say *wait and see*, for if there are any diamonds at all, they are scattered over too extensive a field to be monopolized by two or a dozen companies.

Nevada.

The Reese River *Reveille* of Sept. 28 has the following letter from Lida Valley, dated

LIDA VALLEY, Sept. 18, 1872

From about the middle of July until within the last ten days, very little was done in either developing mines or taking out ore. Despondency superinduced by disappointments had seized upon, and to an extent paralyzed, the energies of the miners and mine owners; not that confidence in the mines was wanting, or the ultimate success of the district doubted. The latter is assured beyond a doubt and in proof we submit the figures, less the fractions, taken from certificates of pulp assays of ten different ledges, the ore having been worked at the Deep Springs mill, and challenge any mining district in the State to equal the product per ton from the same number of ledges:

NAMES.	PER TON.
Simon Pure	$1,303 00
Sewana	1,171 00
Mountain View	1,016 00
Bennett	1,012 00
Oro Fino	896 00
Lida Bella	724 00
Frenchman	425 00
Martin & Henry	386 00
Monitor	330 00
Rappahannock	265 00

Brown's Hope, owned by the Deep Springs Mill Company, has produced ore that worked much higher than any of the ledges named.

The general dissatisfaction of the customers with the returns for their ores at the Deep Springs mill, coupled with broken promises and violated pledges of the mill company to erect a mill in this district last spring and summer—having made no demonstration up to this date—has resulted in retaining our ores upon the dumps, and offering such inducements to reliable mill men as will insure the speedy introduction of mills in the district.

Now the district has been visited and the mines examined by a practicable, competent and reliable mill man, whose opinion was, when he left on the 9th inst., so far as we know, locked up in his own breast; but such is the confidence we have in the mines, that to have them examined together with the facilties for reducing the ores is the precursor of the speedy erection of reduction works, hence the new impetus given, not only to the mining interests but to every branch of business. It requires no prophetic ken to see Lidy Valley district in the list of first-class bullion producing districts in Nevada.

In Gold Mountain district, 20 miles south of Lida Valley, there are many fine ledges—obout one hundred locations of record—the developments made on some 35 ledges aggregate from 10 to 75 feet in depth. In many of the lodes gold predominates. Though this district is much the senior of Lida Valley, very little developments had been made, save on the State Line Ledge until since the organization of Lida Valley. Bordering on the undisputed domain of the "Noble Red Man" its attractions have not hitherto been appreciated.

There are at present about 20 miners in the district—all buoyant with confidence of soon realizing handsome compensation for their labor.

BELMONT.

Still sinking in the Highbridge shaft. As soon as the balance of the machinery arrives, will put up the new steam hoisting works.

Work on the Canfield mine progressing freely; the three levels are under contract. Prospects are encouraging as far as the work has progressed.

ELDORADO CO.—This company is pushing business as fast as human energy will permit. Grading for the new mill is going on with all possible despatch; the battery blocks and frame are all on the ground; another installment of machinery will arrive this week.

In the Eldorado mine night shifts have been put on in order to hurry through the chutes and levels, preparatory to breasting out the ore. The great feature of the mine is the large ore chimney south of the main incline on the 340 foot level. This rich stratum still carries its full width, from seven to eight feet, and the ore seems to increase in richness as well as in extent. A fine body of chloride ore has just been opened in the chute being raised south of the incline, from the 340 foot level.

Arizona mine still continues to show well; stoping just began in the second level above the tunnel. Very rich chloride, over three feet in thickness, has just been exposed. How extensive this body may prove, remains to be seen. This company is working 45 men.

MONITOR CO.—Continuing tunnel number two; running lower level south; have just struck good ore in the drift running south from from Volmer incline north of tunnel, at a depth of 70 feet below tunnel level. Monitor mill is fast approaching completion. It is promised to be as good for all practical purposes as any mill in the State. This company is working 40 men.

GOLD MOUNTAIN.

Mr. John Frost, who recently returned from this district, brings some interesting news concerning it The mines are undoubtedly rich and deserving of attention. Mr. Frost thinks that proper developments there will create a sensation. Nearly all the ledges are gold bearing and give promise of being very extensive. One specimen which he brought in is very rich in free gold. It weighs about 90 pounds and is estimated to be worth fully $600. It is from the croppings of a ledge which is 3 feet thick and well defined. It is a beautiful specimen bespangled with free gold, and is full of the precious metal. It can be seen at Triblett & Clark's saloon. We failed to get the name of the ledge, or further particulars concerning it, but will take occasion to refer to it again.

California.

GRASS VALLEY DISTRICT.

From the Grass Valley *Union*.

THE RICH STRIKE AT THE EMPIRE MINE.—We saw at the banking house of A. Delano yesterday as plendid bar of melted gold of the value of $12,678 75. This gold, in addition to 300 ounces of amalgam, was taken from the plates alone after one week's crushing. In addition to the above there were to be seen on the counter of the bank specimens of rock, taken from the mine yesterday, which were as rich in gold as any we have ever seen taken from a Grass Valley, or any other mine. As the above yield of gold has been exclusive of the battery when that is cleaned up there must of necessity be a large amount of gold taken therefrom. We are pleased to note this favorable turn in the affairs of the company, and still further pleased to learn that the ledge in the drift in which the rich strike was made continues to be two feet in thickness and to show as rich in gold specimens as ever. The rich strike in this old and long worked mine is of sterling advantage to Grass Valley, and should give a fresh impetus to the working of mines in this district which, though paying well in times past, are at present suffered to lie unworked.

KNIGHT OF MALTA MINE.—The miners at work in this mine commenced blasting on Friday evening on the southeast side of the shaft, 90 feet from the surface. The first blast made threw out rock abounding in sulphurets, galena and a very good show of gold, a specimen of which was on exhibition at the banking house of Findley & Co, yesterday. The ledge at the point from which the rock in question was taken, averaged from 6 to 10 feet in thickness, and gives good indications of the Knight of Malta being developed into one of the good paying mines of Grass Valley district.

DAISY HILL MINE.—Thirty-four loads of quartz taken from the second level south of this mine, at a depth of 250 feet on the incline, was crushed and cleaned up at Ben McCauley's mill on Monday last, and resulted in a yield of $41 25 a load. The company are now sinking on the ledge at the point from which this rich pay was taken, and find the ledge equally rich as they go down upon it. The Daisy Hill Company, under its new administration of affairs, is developing a good paying mine, and we are pleased at being able to chronicle so gratifying a fact.

British Columbia.

From a correspondence of the San Francisco *Bulletin*

VICTORIA, August 31, 1872.

I have just returned from a trip to Omineca, the most nothern of the gold fields of British Columbia; and as I have promised many friends in California to give an account of the country you may allow me use your columns.

THE OMMIECA AND OTHER MINES.

It would be unfair to state that the trumpeted fields of Omineca as a gold-producing region are a failure, but they certainly are, as compared with the latter gold excitements in our own Territory—such as Salmon river, or the poorest of the Idaho and Montana mines. A few scattered claims on Manson, Skelton, Slatty and other creeks are paying good wages. Most of the claims working produce only $3 50 per day to the hand, which, in this far-off region, is little over cost of dirt. Gold in infinitesimal quantities is found everywhere in the district, and the most experienced among miners will tell you the section for miles around has been well prospected for placer diggings. The stores pay $16 25 per ounce for dust. The year previous much goods were brought in by way of the seaboard to Skend river, but not over one-eighth has passed up there by that route this season. The usual run of bad travelling all miners experience in plodding through a new country you will not care to know about.

The Cariboo country has no prospect of large returns. I visited the old William creek, which, with many others, seemed to be thoroughly stripped of their wealth. Harney's creek, with a population of perhaps seventy, were panning out fairly. The only hopes of large returns is from Lightning creek. That region requires heavy pumping machinery, and I hear much is in preparation at the Victoria foundry.

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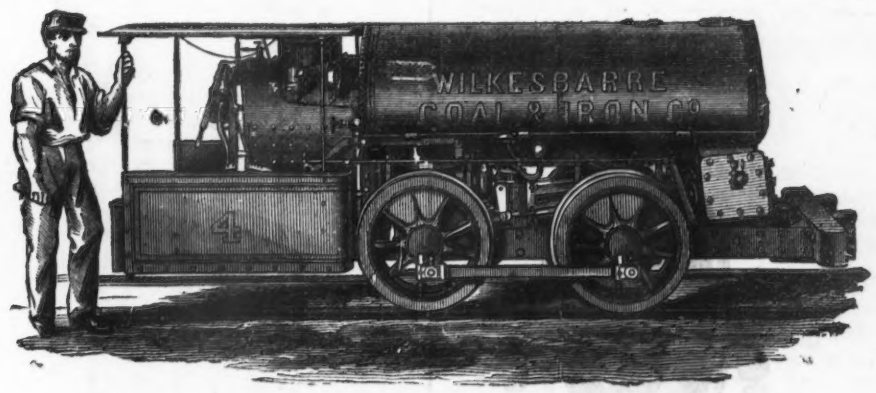

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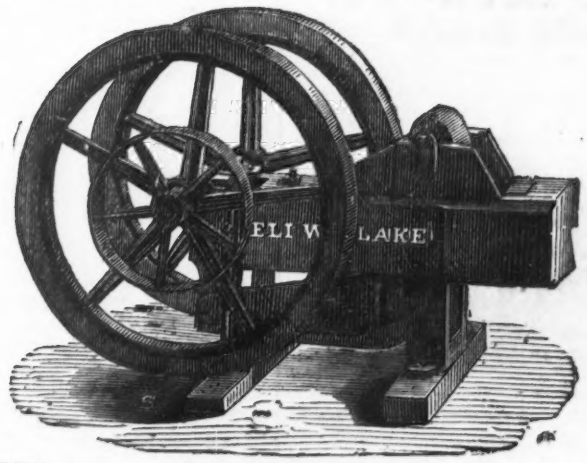

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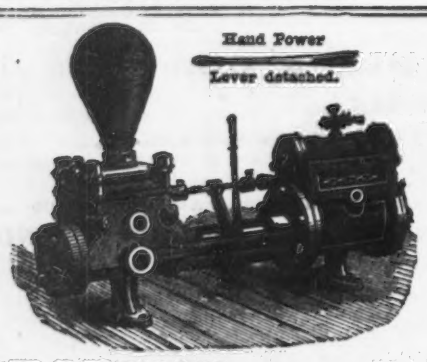

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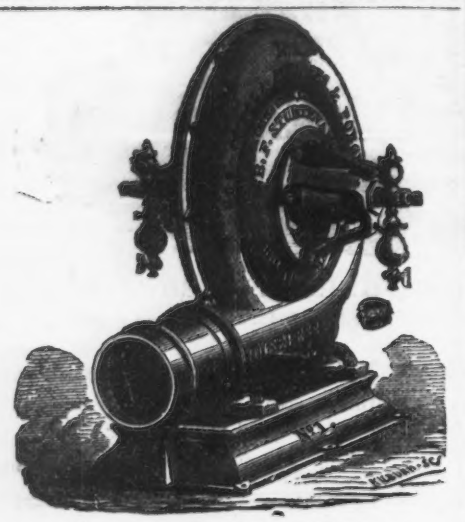

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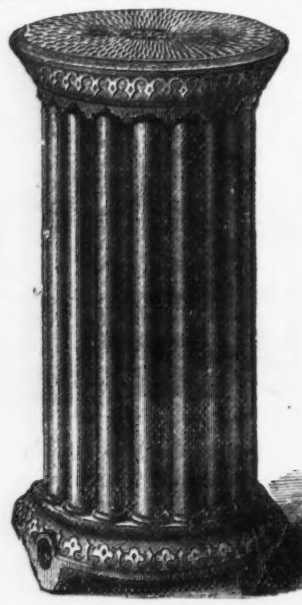

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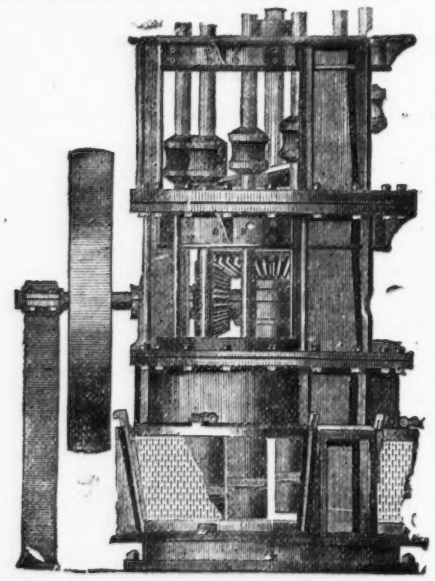

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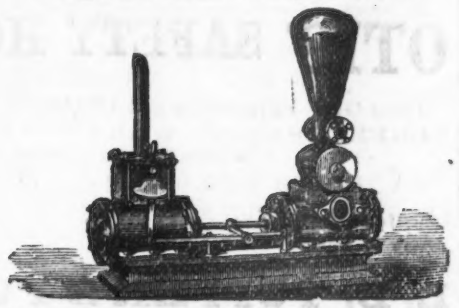

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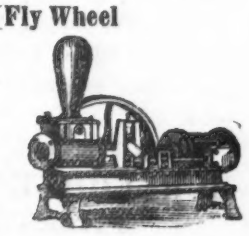

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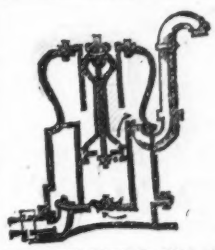

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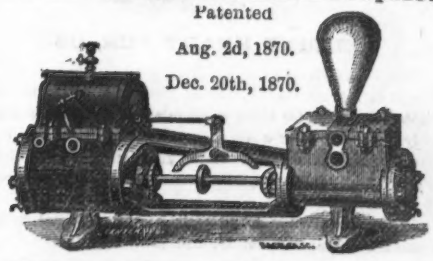

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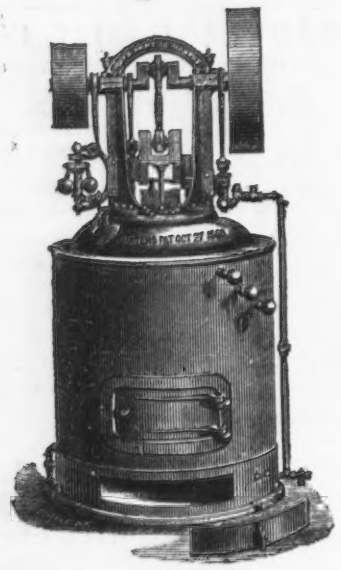

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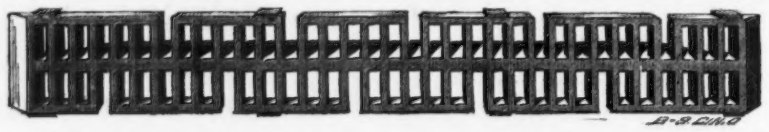

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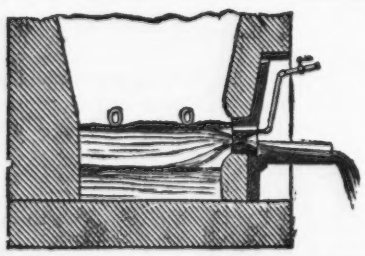

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